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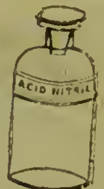

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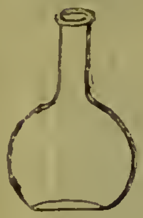

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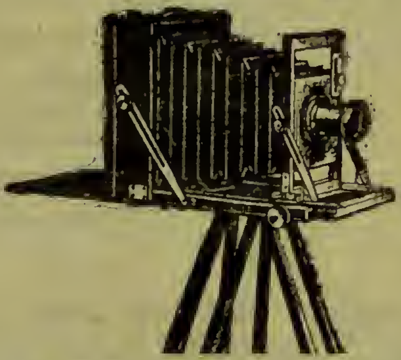

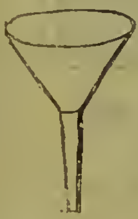

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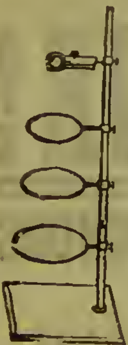

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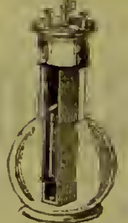

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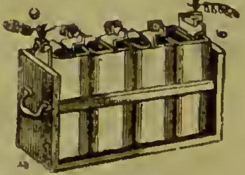

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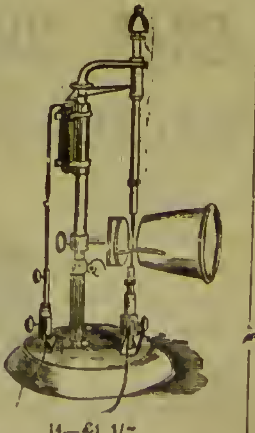

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Annual Catalogue,

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Prices will be found Highly Favourable to the Trade.

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Kept in Stock for the convenience of Country Customers, and supplied at the following prices:—

LAMBERT & BUTLER'S—

Bird's Eye, 1-oz. packets, per lb.	5/3
„ 2-oz. „ „	5/2
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ESTABLISHED UPWARDS OF A CENTURY.

FINEST CRUSHED LINSEED.

£15 per ton, 17s. per cwt., 9s. per 56 lbs., in bags; 27s. for 36 2 lb. Tins; carriage paid within 200 miles.

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In 1 dozen Outer Boxes.

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Of the usual Wholesale Houses, and of the Manufacturer,

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LIVE AND LET LIVE.

Those who have been successful in doing business in certain Preparations, and have thereby put a good profit into their own pockets while they have not taken the trouble to secure the Trade anything, have now pushed their selfish policy further than one would have thought possible. Already they have asked the Trade to stock their goods, lock up capital, pay rent for space for their products, and do business for fun, while they themselves have perhaps done well. How does this policy compare with ours? We have secured to the Trade a fair living profit, have advertised largely, and have placed a substantial business with those who were in a position to handle it. In return for this not a few have imitated our preparations, but we are bound to admit that the rank and file have appreciated it. It now appears that some who have taken every care to put very good profits into their own pockets and have not troubled themselves whether the retailer gets any, *are hurling the fact that we place a living profit in his hands against us as a reason why the public should not buy "Vinolia" Soap.* Unless we have very greatly mistaken the commercial ability of the man of business in Great Britain, who generally keeps an eye open to his own interests, he will immediately submerge these profitless products, packing them out of sight, and furthermore will see to it that orders for them are not renewed. *Our* position is simply this: we have protected the Trade and are putting a good profit into their pockets. This is urged as a reason why the public should not buy "Vinolia" Soap. If this policy is to be followed out, what will become of the retailer? The fact that he makes even a "bread and butter" profit on his goods will be adduced as a reason why the public should not buy them. If we are to protect the retailer, the retailer must protect himself, and thereby in return protect us. When things reach such a pass that flaming advertisements are issued emphasising the fact that the retailer has to handle certain goods for nothing as a reason why the public should buy only those goods, we can only ask him **HOW HE LIKES IT?** It may satisfy those who are in business for their health or to "kill time," but we do not for a moment suppose, from the experience we have had with successful business people, that they are going to tolerate this sort of thing. There is only one way of strangling it, and that is to lend the fullest support to pushing those products which afford a substantial profit, and crowding the others out of sight.

The labourer is worthy of his hire, and we are convinced that only good can come from putting this doctrine into practice in every-day life, just as much in the case of the retailer as that of anybody else.

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**This Section of "The Chemist and Druggist" must be closed for press by Thursday noon of each week.
Remittances payable to EDWARD HALSE.**

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Advertisements in this department must be paid for in advance. From this rule no deviation can be made. Insertions are charged at the rate of ½*d.* per word, provided the advertiser attaches his name and address, for each word of which he must also pay at the same rate; or if he pays **1d.** per word, his name and address will be registered and a figure attached to his advertisement. All correspondence referring to that figure must be addressed to "The Publisher of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.," and the figure must be distinctly endorsed upon the envelope. Letters will then be forwarded to their proper destination. A price is counted as one word, as *e.g.*, £1 10*s.* 6*d.*

DEPOSIT OF MONEY.—In order to ensure safety we offer the following system:—The purchaser of anything advertised in the Exchange Column may remit the amount to us, accompanied by a commission of 6*d.* if the amount is £3 or under; and 1*s.* if over that sum. We acknowledge receipt of deposit to both parties, and hold the money until we are satisfied that either the goods are returned to their original owner or the purchase is completed.

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1 oz. cocain. hydrochlor., 21*s.*, drachm, 3*s.*; 2 lbs. potass. iodid., 10*s.* 6*d.* lb.; bismuth. subnit., 1 lb., 6*s.* 6*d.*; 25-oz. tin quininæ sulph., 25*s.*; 16 oz. thymol, 1*s.* oz.; 1 lb. bismuth. carb., 7*s.*; 8 oz. antipyrine, 2*s.* 6*d.* oz. Bowen, Chemist, Thorne Road, South Lambeth, London.

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Various gold-labelled shop-round bottles and jars, cheap. Toplis, Chemist, Chesterfield.

Sponge stand for sale, as fig. 1224 Ayrton & Saunders's List; nearly new; 15*s.* Lund, Chemist, Bradford.

Show-cases, shop-fittings, carboys, shop-rounds, ointment-jars, utensils of every description; selling off; lease expiring. Natali, 184 Aldersgate Street, London.

Counters, two with plate-glass fronts, price 10*l.* 10*s.* and 6*l.*; range of drawers, with glass labels and knobs, dispensing-screen, five large carboys, sponge-case; tooth-brush case, 35*s.*; and a large quantity of other fittings, second-hand, very great bargains. Philip Josephs, 54 Old Street, Goswell Road, London, E.C.

2 specie-jars, 22 in., 1*l.* each; 2 ditto, 17 in., 15*s.* each; 3 4-gal. carboys, 12*s.* each; 3 doz. ointment and ext. jars, 2*s.* 6*d.* each; 5 3-lb. wide-mouth bottles, gold-labels, 8*s.* doz.; 5 1-gal. black bottles, 4*s.*; 2-mirror 36 by 14 mahogany frame, 16*s.*; 1-mirror 44 by 10, 8*s.*, black frame; mahogany window-encloser, 10 ft. long, 2 ft. 4 in. high, 18*s.* "Chemist," Ashmore Road, Harrow Road, London.

Second-hand dispensing-screens for sale, with mirror centre and marble slab, 5*l.* 15*s.*; 6 ft. ditto, 7*l.*; also several others; 4 ft. A A55, 5 ft. ditto, 6 ft. ditto, 6 ft. 6 in. ditto, 5*l.* 10*s.*; a very elaborate dispensing screen and counter (drawers under), mirror centre and marble slab, cases each side, a bargain. Elkanah Natali, 242 Old Street (12 doors from City Road), London. Only address.

A quantity of good second-hand fittings.—Bargains.—Mahogany-fronted drawers, shelving and lockers, equal to new; solid mahogany counters, 12 ft. long, 7*l.* 10*s.*; 9 ft. ditto, 5*l.* 10*s.*; several others; 12 ft. plate-glass case-fronted counter, mahogany, 10*l.*; several other sizes; also a number of splendid painted-front and mahogany-top counters. Elkanah Natali, 242 Old Street (12 doors from City Road), London. Only address.

Second-hand counter-cases for sale, bargains; also desks and cases from 40*s.*; cigar-cases; sponge-cases; glass tablet, dispensing department, very handsome, 6 ft. long, 90*s.*; centre show-case; bottles, second-hand, from 7*s.* per doz.; pink jars; pill-machines; 24 lilac jars, labelled, 60*s.*; mortars from 1*s.*; glass show-stands, 3 shelves, on pedestals, 36 in. long, 35 in. high × 9, 12, 15 wide, 60*s.* complete; wall-cases, &c., &c. Elkanah Natali, 242 Old Street (12 doors from City Road), London. Only address.

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Three gross 6*d* assorted perfumes, boxed, clean; sample 4 stamps. 3/15.

Two Wenham gas-lamps, in good condition, cost 8*l.*, sent packed for 50*s.* Kemp, Manchester.

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Bag of Tipper's Mystery. State cash price and size to Jas. Watson, Rose Corner, Norwich.

Blocks for sundries in retail price-list. 1/36.

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A Test and Comparison will show that the Mustard Plasters prepared by **JOHNSON & JOHNSON** are of greater strength and generally superior to others. They do not decompose nor change with age. They are packed in very handsome containers, in packages, to retail at from 1d. to 1/6 each.

FOR QUALITY, STYLE, AND PRICE

THEY ARE THE BEST VALUE IN THE MARKET.

THIS COUPON IS WORTH FOUR SHILLINGS AND SIXPENCE.

We feel we cannot do justice to our Mustard Plasters by an ordinary advertisement. The goods speak for themselves far better, and we want every Chemist in Great Britain, Ireland, and the Colonies to see and judge for himself. In order that he may do this and run no risk to himself, we propose to divide with him the cost as follows:—On receipt of Three Shillings, and his name signed on this sheet, we will send, post paid, to any Chemist not at present using our Mustard Leaves, the following:—

	Regular Trade price.	Retail price.
1 Tin J & J Mustards, 3 leaves, cloth	3/ doz.	6*d*. each.
1 ,, ,, ,, 6 ,, ,, ...	6/ ,,	1/ ,,
1 ,, ,, ,, 10 ,, ,, ...	8/6 ,,	1/6 ,,
1 ,, ,, ,, 3 ,, paper	2/9 ,,	6*d*. ,,
1 ,, ,, ,, 10 ,, ,, ...	7/ ,,	1/3 ,,
	2/3	
1 ,, ,, containing 100 leaves .. .. per 100	5/ 1½*d*. each	12/6
THIS SAMPLE LOT COSTS YOU ONLY 3/.	7/3	17/3

Not being familiar with your Mustard Leaves, please send the above, for which I enclose 3/.

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10 leaves in flat tin box, at 7*s*. per doz. boxes.

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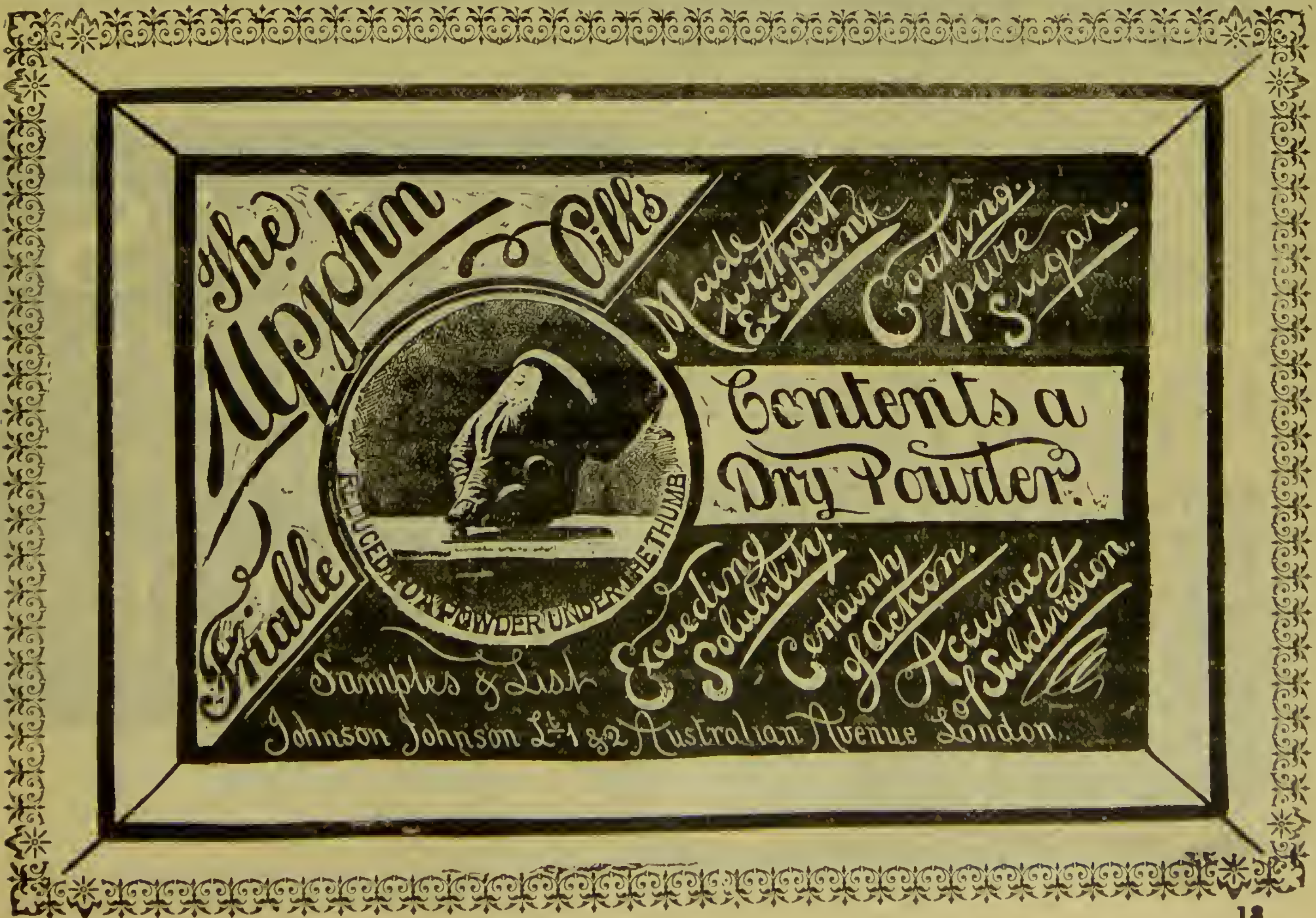

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Made without Excipient

Coating pure Sugar.

Contents a Dry Powder.

Reduced of Powder under the Thumb

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ANCOATS & 146 MINORIES
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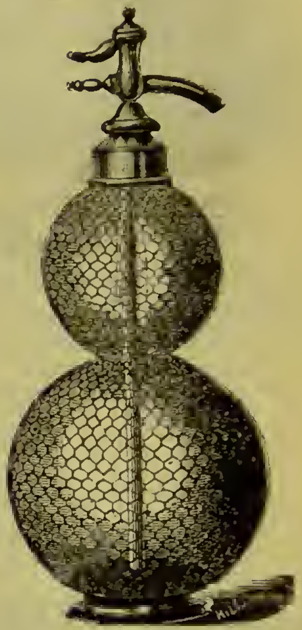
All our Seltzogenes are manufactured on the well-known "Fevre" System, and each one is thoroughly tested before leaving the works.



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SYPHONS ... 1/6 1/8 and 1/10 each.

SELTZOGENES.

1	2	3	4	5	8 pint.
5 6	6/2	7/	8/	9/11	15/6 each.

LEMON-RASPBERRY.

A delicious beverage, non-alcoholic and perfectly pure; guaranteed to be prepared from fresh and specially selected Fruit only.

LEMON RASPBERRY is unrivalled for use with Mineral Waters.

LEMON-RASPBERRY is bottled in special bottles, and is attractive in appearance and agreeable in flavour.

Samples and quotations may be obtained on application from the Sole Manufacturers,

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OREMOR HORDEATUS, delicious substitute for Cod-liver Oil.
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MALT EXTRACT LOZENGES.
MUSTARD LEAVES, best and cheapest.

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SEASON 1891.

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INGRAM & ROYLE,

Packing Free.

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NAME.	Per Dozen.		Original Packages.			
	Bots.	½ Bots	Bottles.		½ Bottles.	
Æsculap	15/	12/	25	30/	50	50/
Apollinaris	6/3	5/	50	25/	100	39/
Bourboule (La)	11/	..	50	42/	..	..
Carlsbad	12/	..	50	46/	..	..
Condal	..	14/	..	..	50	56/
Contrexeville "Le Cler"	8/	..	50	32/	..	..
Do. "Pavilion" ..	9/	..	50	35/	..	..
Ems	7/	..	50	28/	..	..
Flitwick	12/	..	..	..	..	..
Franz-Josef	..	11/	..	..	50	42/
Friedrichshall	13/	10/	25	25/	50	40/
Giesshubler, claret shape ..	8/	5/	50	30/	100	38/
Homburg	12/	..	50	48/	..	..
Hunyadi-Janos	16/	13/	25	30/	50	50/
Johannis-Brunnen	6/	5/	50	23/	100	36/
Kronenquelle	10/	..	50	40/	..	..
Marienbad	10/	..	50	38/	..	..

NAME.	Per Dozen.		Original Packages.			
	Bots.	½ Bots.	Bottles.		½ Bottles.	
Missisquoi	25/	..	24	48/	..	..
Orezza	12/	..	30	30/	..	..
Pullna	12/	8/	40	36/	40	25/
Roisdorf	6/	..	50	25/	..	..
Rosbach	6/	5/	50	24/	100	36/
Royat	9/	..	50	34/	..	..
Rubinat	15/	..	25	30/	..	..
St. Galmier Badoit (Still) ..	6/	..	50	22/	..	..
Do. Noël (Sparkling)	6/	4/	60	26/	100	34/
Selters	6/	4/6	50	24/	50	17/
Sulis	6/	5/	50	23/	100	36/
Tarasp	12/	..	30	28/	..	..
Taunus	5/6	4/6	50	22/	100	32/
Vals	8/6	..	50	33/	..	..
Vichy (State Springs)	8/6	7/6	50	33/	50	29/
Victoria Ofner	14/	10/	25	27/	50	38/
Wildungen	10/	..	50	40/	..	..

DETAILED PRICE LIST AND PAMPHLET ON APPLICATION.

16

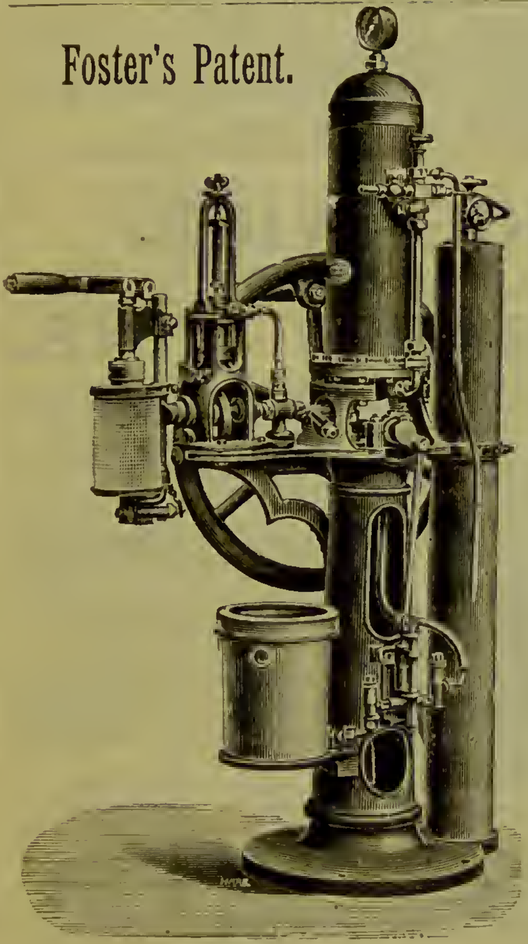
[2]

SODA WATER MAKING

WITH

LIQUEFIED CARBONIC ACID GAS.

Foster's Patent.



The No. 2 Compact Soda Water Machine.

THE No. 1 "COMPACT" MACHINE

Is specially designed for Chemists and Hospitals, and can be used for either Syphon, Ball-stoppered Bottles, Cork or Seal Bottles. Producing capacity, by hand power, 60 dozens per hour.

PRICE £60.

Or, if fitted for steam power, 120 dozens per hour, with an extra filling machine.

THE No. 2 "COMPACT" MACHINE

(AS SHOWN)

Made on the same principle, but smaller in its capacity. Producing capacity, by hand, 30 dozens per hour.

PRICE £48.

Or, if fitted for steam, 60 dozens per hour, with an extra filling machine.

Iron Vessel containing an average of 28 lbs. by weight of Liquefied Gas } 10s. each.

And has sufficient Gas to manufacture about 18 gross of highly-charged Soda Water (10-oz. Bottles), or double this quantity of splits.

A Charge of £3 is made for the Iron Vessel as deposit, which is returnable.

These Machines occupy little space, and are ready for use immediately! They require no fixing! Are self contained and produce soda water, lemonade, &c., of the highest class and greatest purity, at a minimum of cost.

THE "NIAGARA" BOTTLE

Or Improved Codd's

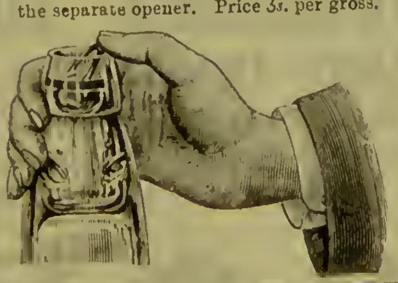
Is the most perfect Bottle in the Market.

Send For Sample and Compare.

PRICES ON APPLICATION.

Name on Bottles free for orders of 30 gross. Under that quantity Moulds charged 10*s.* for each size or shape. Extra Rings 1*s.* 6*d.* per Gross.

The patent "Attached Opener" converts the "Codd" type of bottle into the easiest opened of any in the market. It can be instantly fitted; the bottle can be instantly opened by a child without danger; and it does away with the separate opener. Price 3*s.* per gross.



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It is the cheapest, strongest, handsomest, and best in the World.

Pure Block Tin Tops

PRICE 1/6 EACH.

Nickel-plating Tops from 4*d.* each.
Silver-plating Tops from 6*d.* each.
Marking on Tops Free for orders of 250.
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BARNETT & FOSTER, 26T "NIAGARA WORKS," EAGLE WHARF ROAD, **LONDON, N.**

ROBINSON'S
LIEBIG'S BEEF WINE.

Composed of Liebig's Extract of Beef, Extract of Malt,
and sound Port Wine.

REPORT ON BEEF WINES.

From the results of my Analyses of various Beef Wines I have had occasion to examine, none have equalled as regards strength, purity of ingredients, and (of no less importance) the skilful and judicious manner in which the respective ingredients have been proportioned and combined, the Liebig's Beef Wine manufactured by Mr. B. Robinson, of Pendleton, Manchester.

It is in every sense a reliable preparation, embodying in a pleasing and palatable form all the acknowledged medicinal and nutritive properties pertaining to Liebig's Extract of Meat, Extract of Malt, and sound Port Wine

WILLIAM ELBORNE, F.C.S., F.L.S.,
Lecturer on Materia Medica in the Owens College, Manchester (Victoria University).

December 15, 1838.

ROBINSON'S ORANGE WINE.

Specially prepared for Quinine Wine, does not deposit, will keep good in any climate, and well adapted for Export Trade. Supplied in Casks containing 9, 18, 30, 60, or 120 Gallons. Terms on application. [2]

PHARMACEUTICAL SHERRY WINE.

This Wine is well adapted for Pharmaceutical Preparations, and is the strength ordered by the B.P. Price, in 6-Gallon Casks, 5/6 per gallon: in 2-Gallon Jars, 6/- per gallon, carriage paid. Casks charged 7/6, Jars 2/6, and allowed if returned. Cash or satisfactory reference to accompany order

B. ROBINSON, Distiller and Brewer of British Wines, Church St., Pendleton, Manchester.

ROWNTREE'S
"ELECT" COCOA.

The "MEDICAL PRESS AND CIRCULAR":—

"Certainly this preparation is of delicate flavour . . . It is perfectly soluble . . . the small quantity required for the *immediate* production of a cup of excellent cocoa will ensure for this 'Elect Extract' a favourable reception at the hands of persons of weak digestion, and all who prefer this wholesome beverage to tea and coffee.

The "BRITISH MEDICAL JOURNAL" says:—

"Rowntree's Cocoa Extract is one of the best. Its flavour and aroma are good. Cocoa thus preprepared is one of the most digestible articles of food."

YORK, ENGLAND

IN THE

TRYING HOT WEATHER

When INFANTS often become greatly relaxed, regulation of their diet is of the utmost importance, and therefore all mothers should try

NESTLÉ'S FOOD

which will be found most beneficial.

Sample Tin, containing enough Food for a fair trial, and Pamphlet, with Medical Testimony as to above, will be sent Post Free on application to HENRI NESTLÉ, 9 Snow Hill, E.C.

SPIKING'S MALT NURSERY BISCUITS

FOR INFANTS AND INVALIDS.

NOURISHING, STRENGTHENING, AND FLESH-FORMING.

"Spiking's Malt Biscuits are an admirable article of dietary for use in the Nursery or Sick Room."—*British Medical Journal*, May 16th, 1868.

RECOMMENDED BY THE MEDICAL PROFESSION.

SPIKING & CO.

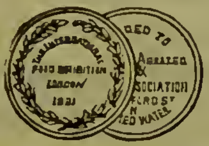
Bakers to Her Majesty and H.R.H. the Prince of Wales,
5 DOVER ST., PICCADILLY; 24 ECCLESTON ST., BELGRAVIA; 116 BROMPTON ROAD, LONDON
AND OF ALL WHOLESALE HOUSES.

Telephone No. 7547. Telephone No. 7547.

TRADE "CAMWAL" MARK.

TOPS THE TRADE

ONLY PRIZE MEDAL,



LONDON, 1881.

RAISED BY THE PERSISTENT ENERGY AND GREAT CARE OF CHEMISTS

Year	No. of Members	Dividend
1878	119	None
1879	350	None
1880	430	None
1881	540	None
1882	616	3½
1883	708	5

TELEGRAPHIC ADDRESSES:

Rubine, London.
Chemists, Starbeck, Harrogate.
Camwal, Bristol.

HIGHEST PRIZE MEDAL,

BRADFORD, 1882.

STRENGTHENED AND SUPPORTED BY THE APPROBATION OF THE MEDICAL PROFESSION

Year	No. of Members	Dividend
1884	908	6
1885	1,193	6
1886	1,463	6
1887	1,612	7½
1888	1,892	5
1889	2.031	7½
1890	2088	8¾

TELEGRAPHIC ADDRESSES:

Rubine, London.
Chemists, Starbeck, Harrogate.
Camwal, Bristol.

This Company manufactures the various descriptions of Mineral Waters of the highest class and of specified formula, and supplies **ONLY** Chemists and Hospitals.

PRICES.

		In Corked Bots.	In Syphons.
Carbonated Water		1/-	1/6
Soda	„ 5 Grains to Half-Pint	1/-	1/6
Soda	„ B.P. 15 „ „	1/-	1/6
Potash	„ 5 „ „	1/-	1/6
Potash	„ B.P. 15 „ „	1/-	1/6
Seltzer		1/-	1/6
Lemonade		1/-	2/6

	In Corked Bots.	In Syphons.
Lime Juice	1/-	2/6
Ginger Ale	1/-	2/6
Ginger Beer, Glass	1/-	2/6
Lithia, B.P., 5 grains to Half-pint	1/6	2/6
Iron and Quinine Water	1/6	—
Mineral Acid	1/6	—

Syphons, 24*s.* per dozen. Cases—3 dozen 3*s.* 6*d.*; 4 dozen 4*s.* 6*d.*; 6 dozen 5*s.* 6*d.* each. Empties allowed for at same prices.

3d. per dozen charged extra for the delivery of Syphons in London.

SYRUPS.

In 26-oz. bottles, handsomely labelled and capsuled. Raspberry, Strawberry, Cherry, Red Currant, Black Currant, Pine Apple, &c., 8/- per dozen. Lime Fruit Cordial, 6/6 per dozen. Bottles charged 1/- per dozen, and allowed for on return.

☞ A holder (Chemist) of £1 share is entitled to all the advantages of this Association.

SAMPLE CASE OF WATERS SENT FREE.

Handbills with Name and Prices supplied gratis to Shareholders.

The Chemists' Aerated and Mineral Waters Association, Limited,

LONDON, HARROGATE, & BRISTOL.

EIGHT PRIZE MEDALS AWARDED.

GOODALL'S

HOUSEHOLD SPECIALITIES.

YORKSHIRE RELISH.
Most Delicious Sauce in the World. Bottles, 6*d.*, 1*s.*, and 2*s.* each

GOODALL'S BAKING POWDER.
The Best in the World. 1*d.* Packets; 6*d.*, 1*s.*, 2*s.*, and 5*s.* Tins.

GOODALL'S EGG POWDER.
One 6d. Tin is equal to 25 eggs. In 1*d.* Packets; 6*d.*, 1*s.*, 2*s.* and 5*s.* Tins.

GOODALL'S CUSTARD POWDER.
Delicious Custards without Eggs. In Boxes, 2*d.*, 6*d.*, and 1*s.* each.

GOODALL'S BLANCMANGE POWDER
Delicious Blancmange in a Few Minutes. Boxes, 6*d.* and 1*s.* each.

GOODALL'S QUININE WINE, B.P.
Best Tonic yet Introduced. Bottles, 6*d.*, 1*s.*, and 2*s.* each.

GOODALL'S GINGER-BEER POWDER.
Makes the Best Ginger-Beer. Packets, 3*d.* and 6*d.*

GOODALL'S BRUNSWICK BLACK.
For Painting Stoves, Grates, Iron, Tin, &c. 6*d.* and 1*s.* Bottles

GOODALL'S LAVENDER WATER.
A Rich and Lasting Perfume. Bottles, 1*s.*, 2*s.*, and 5*s.* each.

GOODALL'S PLATE POWDER.
For Polishing and Cleaning all Metals. Boxes, 6*d.*, 1*s.*, and 2*s*

GOODALL'S JELLY SQUARES.
Make a Delicious and Nutritious Jelly. In ½-pint, 1-pint and Quart Boxes, 3*d.*, 6*d.*, and 1*s.* each.

PROPRIETORS—GOODALL, BACKHOUSE & CO., LEEDS.

PATENT MEDICINES AND DRUGGISTS' SUNDRIES.

Monthly Price List of Patent Medicines, Druggists' Sundries &c., will be sent post free on application to

GOODALL, BACKHOUSE & CO., LEEDS.

TO THE

CHEMISTS & DRUGGISTS OF GREAT BRITAIN.

TELEGRAPHIC ADDRESS:
COLEMAN,
GEORGE'S, NORWICH.

St. George's, Middle St.
NORWICH,
December, 1887.

The Excise Authorities having created a difficulty as to the sale of Medicated Wine containing a certain percentage of alcohol, we obtained in January last, from the Inland Revenue Authorities, permission to sell our WINCARNIS,* or Liebig's Extract of Meat and Malt Wine, **WITH QUININE,** without a Wine Licence, and many Chemists not holding a Wine Licence have sold considerable quantities. In order further to meet the requirements of the trade, we have introduced a Liebig's Extract of Meat and Malt Wine, **NON**-Alcoholic, made from the juice of the Grape, Liebig's Extract of Meat, and Extract of Malt. This also can be **SOLD WITHOUT A WINE LICENCE.** Your orders will oblige either direct or through the Wholesale Houses.

Yours obediently,

COLEMAN & CO., LIMITED.

N.B.—The Wine is sold in Bottles, 2/9 and 4/6 each. Trade prices on application.

P.S.—Where the Magistrate's Certificate is not held we are willing to pay the **entire cost of a Retail Certificate** (the holder of which can sell any kind of Wines) if an **assorted order of 6 dozen** is sent us of any of our preparations. List on application. Our WINCARNIS,* or **Liebig's Extract of Meat and Malt Wine WITHOUT QUININE** commands a very large sale, and is recommended by over two thousand medical men who have sent us testimonials in its favour.

SOLE MANUFACTURERS—

COLEMAN & CO., LIMITED,
ST. GEORGE'S, NORWICH,
AND 3 NEW LONDON STREET, LONDON, E.C.

* WINCARNIS is a NEW NAME, registered to prevent fraudulent imitations.

AGENTS APPOINTED

FOR SALE OF

DR. ALLINSON'S NATURAL FOOD.

The MOST DELICIOUS and LEAST COSTLY, for

BABIES, CHILDREN (any age), INVALIDS, AND ADULTS.

The INVENTION of

DR. T. R. ALLINSON, [11]

The Eminent Hygienic Physician, and Authority on Health and Diet, and each Packet bears his Autograph.

This FOOD is not highly spiced, or chemically prepared, but

A PURE and NATURAL FOOD.

PACKETS, 1d., 3d., 6d., 1s. EACH.

Write for Samples and Prices to

THE NATURAL FOOD COMPANY,

PETER TYRER, Proprietor,
South Street, Bermondsey, LONDON, S.E.

A WONDERFUL SUCCESS!!

NON-INTOXICATING BEER
Made from MASON'S Original

EXTRACT of HERBS

(REGISTERED.)

Composed of Yarrow, Dandelion, Comfrey, & Horehound.

ENLARGEMENT OF SIZE.

A Sixpenny Bottle makes EIGHT GALLONS of

HERB OR BOTANIC BEER

A NON-INTOXICATING BEVERAGE

Full of Body and Flavour, with a Creamy Head like Bottled Ale, the most perfect substitute for Alcoholic Drinks ever discovered, for either Summer or Winter.

BEWARE of mean and fraudulent imitations.
BEWARE of others copying our title.
MASON'S is the original and only genuine.
MASON'S is a Special Compound entirely from Herbs.

NO OTHER EXTRACT MAKES BEER LIKE IT.

Sold in Bottles at 6d., 1/, & 2/ each, with directions.

MASON'S WINE ESSENCES

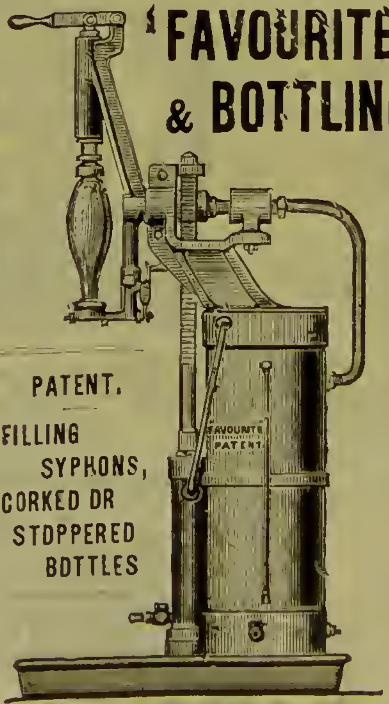
Make Temperance Wines in a few minutes.
Ginger, Orange, Lemon, Raspberry, Black Currant, &c.
These are having a very large sale now, and are extensively advertised.
Sold in Bottles at 6d., 1s., and 2s. each.
Quotations on application.

SOLE INVENTORS & MANUFACTURERS: **NEWBALL & MASON,**
Manufacturing Chemists and Botanic Druggists, NOTTINGHAM.

COMPLETE REVOLUTION IN THE MINERAL WATER TRADE.

150 LARGE BOTTLES OF SODA, SELTZER, OR OTHER MINERAL WATER FOR **1s.**

'FAVOURITE' AERATING & BOTTLING MACHINE.



PATENT.

FILLING
SYPHONS,
CORKED OR
STOPPERED
BOTTLES

The only Automatic Machine for Pumping, Filling, and Syruping by one person and at one operation.

For Ships, Hotels, Restaurants, Chemists, Grocers, Wine Merchants, Brewers, Dairy Keepers, Greengrocers, and Manufacturers of Aërated Beverages generally.

A Complete Machine, by which one man is capable of making about 25 dozen bottles of Pure Aërated Waters per hour AT LESS THAN ONE SHILLING PER GROSS.

The Machine occupies a Floor Space of only 2 feet by 2 feet, and weighs about 1½ cwt.

Further particulars on application to

HENRY ALEXANDER & CO., LIM.,
80 QUEEN VICTORIA ST., LONDON, C.
21

POTTERS HERB BEER EXTRACT

TERMS:

In 6d. Bottles (attractive label in 6 colours),
3/6 per doz.; 39/ per gross.

HANDBILLS, SHOW CARDS, &c., with all orders.
In Bulk, 9d. per lb.; 70/ per cwt.

SPECIAL NOTICE.

We can supply 6d. Bottles with special wording on labels, as "Smith's Herb Beer Extract," &c. Labels in colours. Price 39/ per gross nett.

POTTER & CLARKE,

WHOLESALE & EXPORT BOTANIC DRUGGISTS,

5, 6 & 7 RAVEN ROW, ARTILLERY LANE, E.

HERBS IN PACKETS

Trade Mark

On each

Packet

Registered

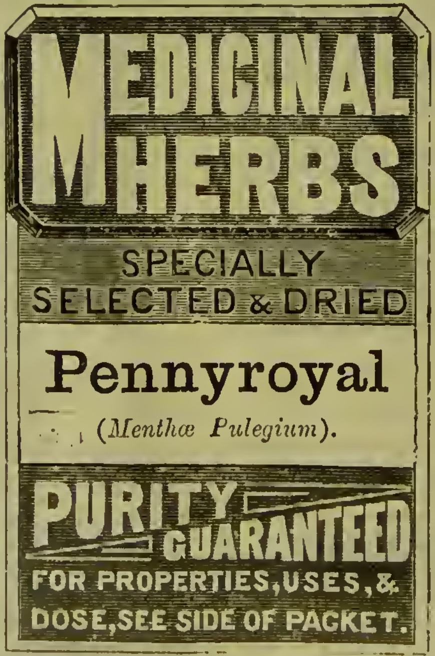
Price 7/- per gross.

PACKETS TASTEFULLY DESIGNED.

ALL HERBS CAREFULLY SELECTED.

Descriptive Pamphlets, Show Cards, Handbills, &c., with every order.

Facsimile of Face of Packet.



MEDICINAL HERBS

SPECIALLY SELECTED & DRIED

Pennyroyal

(*Menthæ Pulegium*).

PURITY GUARANTEED

FOR PROPERTIES, USES, & DOSE, SEE SIDE OF PACKET.

Trade Mark

On each

Packet

Registered

Price 7/- per gross.

FULL DIRECTIONS AND HERBAL RECIPES ON EACH PACKET.

Descriptive Pamphlets, Show Cards, Handbills, &c., with every order.

POTTER & CLARKE (Wholesale Botanic Druggists, 5, 6 & 7 Raven Row, Artillery Lane), **LONDON, E.**

BURROUGHS WELLCOME & CO

S. G. CLEMENTS & CO.

(Established 1812.) **BRISTOL ANNATTO WORKS.** (Established 1812.)

LIQUID EXTRACT ANNATTO.
A very bright, clear, and strong solution.

ANNATTO IN CAKE.
Giving, when dissolved, a deep Orange Stain with minimum of sediment.

OIL BUTTER-COLOURING.
Unsurpassed in richness of tint, and unobjectionable in taste or odour.

PRIME RENNET
Has each season an increasing sale.

RENNET POWDER (FOR JUNKETS, &c.)
In handsome Tins, 6d., 1/-, 1/6.

DRUG & SPICE MILLS,

TRADE MARK REGISTERED

PRIME RENNET
Produces the Maximum of Curd.
SPECIAL PRICES TO BUYERS IN BULK.
Grinders of all kinds of Drugs and Spices for Cattle Powders, &c.

12, 13 & 14 LEWIN'S MEAD, BRISTOL.

"MYRTLE GROVE" TOBACCO

In 1-oz., 2-oz., and 4-oz. Packets, and ¼, ½, 1 lb. Tins only.

TADDY & CO., 45 Minories, LONDON

ESTABLISHED 150 YEARS.

SNUFF, TOBACCO, AND SEGAR MANUFACTURERS.

Write for List of Specialities.

BONSON'S DIGESTIVE TEA.

TRADE MARK, STAG'S HEAD.

The Tannin Minimised.

ABSOLUTELY PURE.

EASILY DIGESTED.

SOLD ONLY BY CHEMISTS
Price List on Application.

ADDRESS—
Midland Counties Depot, 29 Carr's Lane, BIRMINGHAM

TOBACCO AND CIGARS—MIXED PARCELS.

Every Requisite for the Smoker in One Order.

The following Manufacturers' Packet Tobaccos supplied at their List Prices, CARRIAGE PAID:—Wills, Cope, Hignett, Gallaher, Taddy, Ogden, Phillips, Player, Murray, Archer, Clarke, Brankston, Morris, Mitchell, Smith, Lambert & Butler, Pace, Goodwin, Duke, Kinney, Kimball, Richmond Cavendish Company, Carroll, Lorillard, &c. Havana, Mexican, Manilla, Indian, and Swiss Cigars and Cheroots at Importers' Prices.

The Cigarettes of the following Firms at List Prices:—Goodwin, Allen & Ginter, Kinney, Duke, Kimball, Au Bon Fumeur, Wills, Player, Lambert & Butler, Cope, and the leading Egyptian and Turkish Houses.

BRITISH CIGARS from 4*s.* to 20*s.* per 100. All carefully selected and well matured. The largest and most varied stock in the United Kingdom to select from.

Irish Roll, Pigtail, Nailrod, Target, Cake, Plug, and all other hard Tobaccos; also Flakes, Shags, Virginias, Cut Cavendish, and every description of plain and fancy Cut Tobaccos of standard quality at lowest prices.

Tobacconists' Fancy Goods and Smokers' Sundries of every description at current rates.

Carriage paid on parcels from £2 upwards to any station in the United Kingdom. *SEND FOR DETAILED PRICE LISTS.*

SINGLETON & COLE, Ld. { Tobacconists' Factors, Tobacco, Snuff and Cigar Manufacturers & Importers
Cannon Street and Fore Street, BIRMINGHAM.

TO CHEMISTS AND DRUGGISTS. WANTED, AGENTS IN ALL TOWNS FOR

GEROLSTEIN.

CHAMPAGNE OF NATURAL MINERAL WATERS.
ALLOWS A LARGER PROFIT TO THE TRADE THAN ANY OTHER NATURAL MINERAL WATER.
Testimonials from Royalty and the most eminent of the Medical Profession.

GEROLSTEIN COMPANY. Offices—153 Cheapside, LONDON, E.C.

"RAMORNIE." **LIEBIG'S** Extract of Meat,

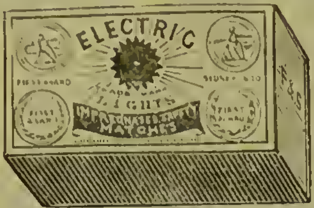
As supplied to the Admiralty, War, and India Offices.

1-lb. Jars	per lb.	6/9	per doz.	81/0
½-lb. Jars	"	7/0	"	42/0
¼-lb. Jars	"	7/3	"	21/9
2-oz. Jars	per lb.	7/8	per doz.	11/6
1-oz. Jars	"	8/4	"	6/3
½-oz. Jars	"	8/8	"	3/8

QUOTATIONS FOR EXTRACT IN "BULK" ON APPLICATION. *6 lbs. Carriage free.*

Write for Detailed Price List to the Australian Meat Co., 9 and 11 Fenchurch Avenue, E.C.

MATCHES.



SAFETY, PARAFFIN, AND TANDSTICKOR.

Matches at rates which will compare favourably with those of any other house.

☞ Also in stock Lights in Darkest England Safety Matches, manufactured by the Salvation Army. Prices upon application.

OVAL "UNBREAKABLE" TUBS.

Light, strong, durable. No hoops to drop or rust off. Measurement, 16 ins. Enamelled white inside, marbled outside.

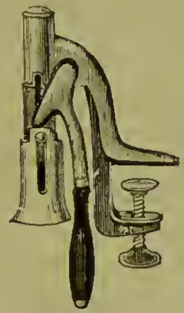
No Nursery complete without them.

Every Yacht afloat should carry two or three.

All the high-class Wholesale London establishments supply at 21/ per dozen.

THE "RAPID" CORK PULLER.

(PATENT APPLIED FOR.)



For the use of Hotels, Restaurants, Drug Stores, Clubs, &c.

It is the best and most complete Machine made for Extracting Corks. It is the Simplest and Cheapest in the market. In pulling corks you never break a bottle, as the strain is on the strongest part of the bottle. You can cut the wires and pull the cork of a Bass' Ale or any Mineral Water Bottle with one motion of the hand.

THE "SUN" KNIFE CLEANER.

There is an open market for this machine (which is being extensively advertised) for thousands of families who cannot afford the cost of a rotary box machine, and yet require something better than a knife-board.

Cases of 100 Large Bars	.. ..	25/- net.
Cases of 60 Large Bars	.. ..	15/- „
Boxes of 48 Half Bars..	.. ..	6/3 „

THE ONLY GENUINE

SWISS BLACKING.

Cirage suisse au brillant rapide
Nº
SUTTER-KRAUSS&Cie
OBERHOFEN
Canton de Thurgovie, Suisse.
(Déposée)

Cirage suisse au brillant rapide
le véritable ami et l'aide des domestiques
reconnu comme
le meilleur conservateur de la chaussure

The Swiss Blacking, being very rich in fat, has to be largely diluted with water for use, and will in consequence go twice as far as any other. The smallest quantity gives a lasting polish.

MANUFACTURERS—

SUTTER, KRAUSS & CO.

OBERHOFEN, THURGAN, SWITZERLAND.

ANOTHER NEW AMERICAN INVENTION.

THE MAGIC POCKET SAVINGS BANK.

RETAIL SIXPENCE EACH.

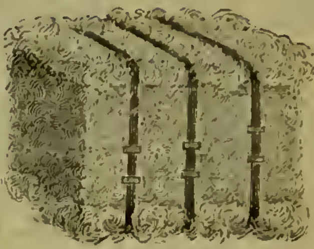
RETAIL SIXPENCE EACH.

Locks itself, Registers the amount deposited, and can only be opened when £1 in Sixpences has been deposited.

☞ *We undertake to supply on receipt of order at 4/- per dozen net.*

Full particulars upon application.

WOOD WOOL.



OR WOOD-FIBRE PACKING.

This is used extensively for packing purposes in place of straw, &c. We use it largely, and can recommend it. In Bales of 1 cwt., 6/ per cwt.

BUNGS FOR OIL BOTTLES.

6d. per gross.

CHEAVIN'S WORLD-RENOWNED FILTERS

PATENT REMOVABLE PLATE.

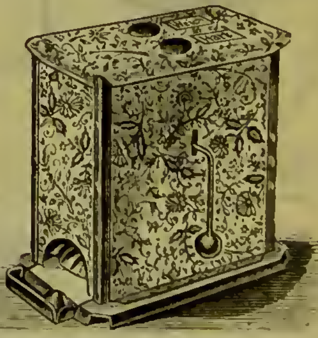
Nos.....	A	B	C	D	E	F	G	H
Gallons	½	1½	2½	3½	5	6	7	12

CHEAVIN'S.

Lowest Prices and Discount Guaranteed.

THE LAST AND BEST

EGG-TIMER.



It is capable of the nicest adjustment, and the most exacting in the matter of eggs having once, so to speak, "set" the timer, can then hand it over to the cook with reasonable assurance of having every egg done to a turn for him thereafter. Drop the eggs into a saucepan and the ball into its pocket as nearly simultaneously as possible and go about other duties heedless of the passage of time until the bell sounds its warning that the eggs are cooked. If she neglects them then she is deaf or incorrigible.

Price per dozen, 24/.

W. B. FORDHAM & SONS, Limited, 36 to 40 York Road, King's Cross, LONDON, N.

Telephone Number, 1852. Telegraphic Address—CHEMICUS LONDON.

ADVERTISERS' AND BUYERS' REFERENCE LIST AND INDEX TO ADVERTISEMENTS.

ADVERTISEMENTS APPEARING IN THIS ISSUE OF "THE CHEMIST AND DRUGGIST."

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AERTD & MINRLS

Apollinaris Co.
Barnett & Foster
Chemists' Aërated Waters Association
Ellis & Son (Ruthin)
Franz Joseph Co.
Gerolstein | Guber Spring
Hassall & Co. | Hay, W.
Idris & Co.
Ingram & Royle
Jewsbury & Brown
Mills & Co. (Bourne)
Schacht, W., & Co.
Schweppe, J., & Co.
Wilcox & Co.

DITTO PLANT

[See SYPHONS and ESSENCES.]
Alexander, H., & Co. (Lim.)
Barnett & Foster
Brathy & Hinchliffe (Lim.)
Gueret Frères
Tyler, Hayward, & Co.

AGNCIES ABROAD

Acard, Ed.
Australian Drug Co.
Cocking & Co. (Japan)
Felton, Grimwade & Co. (Melbourne)
Fougera & Co. (New York)
Gardner & Co.
Kempthorne, Prosser & Co. (N.Z.)
Lennon, B. G., & Co.
Levy, Jules
Murdoch, John, & Co.
Peake, Allen & Co.
Prosser, Taylor & Co.
Roberts (Paris, &c.)
Rocke, Tompsitt & Co.) Melbourne)

ACETIC ACID

Fuerst Bros.
Greeff, R. W., & Co.
Morris & Callard (Salts)

ALMANACKS

Ford, Shapland & Co.
Hildesheimer & Faulkner

ALKALOIDS

Howards & Sons (Cinchona)
Smith, T. & H., & Co.

AMMONIA

May & Baker (Lim.)
White, A., & Sons
Woolley, Sons & Co.

ANNATTO

Clements, S. G., & Co.
Nicholls, W., & Co.

APPARATUS

Ohlson, A.
Orme, J., & Co. (Scientific)
Perken, Son & Rayment
Wedgwood & Sons (Mortars)

BAKING POWDER

Andrews Bros.
Goodall, Backhouse & Co.

BANDAGES

Bailey, W. H., & Son
Robinson & Sons
Schutze, F., & Co.

BATH GLOVES

Solport Bros.

BEESWAX

Boehm, F.
Bowdlear W. H., & Co.
Taylor, A. J., & Co.

BICARB. SODA

Brunner, Mond & Co. (Lim.)

BISMUTH PREP.

Hearon, Squire & Francis
Hewlett & Sons
Howards & Sons
May & Baker (Lim.)
Symes & Co.
Tyrer, T., & Co.
White, Alfred, & Sons

BOTTLES

Aire & Calder Bottle Co. (Lim.)
Barnett & Foster
Barrett, R. H.
Brathy & Hinchliffe (Lim.)
Breffit's (Lim.)
Evans, Sons & Co.
Gilbertson, H., & Sons
Hearn, E. A., & Co.
Isaacs & Co.
Johnsen & Jörgensen
Kilner Bros.
Maw, S., Son & Thompson
Poths, H., & Co.
Shirley, A. W.
Thompson, Walters, Hole & Co. (Lim.)
Toogood, W. | Youidon, E.

BOOKS

Hargreaves, Dr., M.D.
Muter, Dr.
Squire & Sons
Wills & Wootton

BOXES

Austin & Co. (Cardboard)
Ayrton & Saunders
Evans, Sons & Co.
Owen, J., jun.
Parmenter, I. W., & Co. (Lim.)
Remus, T.
Robinson & Sons

BRUSHES

Bidwell Bros. (Lim.)
Evans, Sons & Co.
Kent, G. B., & Sons

BUTTER COLR, &c.

Clements, S. G., & Co.
Oldfield, Pattinson & Co.
Tomlinson & Hayward

CAMPHOR

Fordham, W. B., & Sons (Lim.)
Fuerst Bros.
Howards & Sons
Keene & Ashwell (Homœopathic)
May & Baker (Lim.)

CAPSULES (METALLIC)

Betts & Co.
Brooks, Peel & Co.
Sanders, H. G., & Son

CAPSULES

Denoual, J. (Medicinal)
Duncan, Flockhart & Co.
Evans, Sons & Co.
Hooper, B., & Co.

CSCRA SAGRADA

Duncan, Flockhart & Co.
Evans, Sons & Co.
Ferris & Co.
Moss, J., & Co.

CASTOR OIL

Allen & Hanbury
Fuerst Bros.
Greeff, R. W., & Co.
Lofoden Cod Liver Oil Co.

CATALOGUE

Maw, S., Son & Thompson
Sanger & Sons'

CEMENT

Hickisson, J.

CHALK PRECIPTE

Levermore, Aug., & Co

CHEMICALS

Boehm, F.
Bramwell, E., & Son
Brunner, Mond & Co. (Lim.)
Bush, W., Son & Co.
Fletcher Fletcher & Stevenson
Fuerst Bros.
Goodall, Backhouse & Co.
Greeff, R. W., & Co.
Hill, A. S., & Son
Hodgkinsons, Treacher & Clarke
Howards & Son (Pharm.)
Kuhn, B.
Levermore, Aug., & Co.
Lofthouse & Saltmer
Lorenz, H.
May & Baker (Lim.)
Morris & Callard Moss & Co.
Reade Bros. & Co.
Smith, T. & H., & Co.
Stern G. & G. (Pumiline)
Tyrer, T., & Co.
Washington Chemical Co.
White, A., & Sons
Zimmermann, A. & M.

CHLRIDE OF GOLD

Greeff, R. W., & Co.
Rowland, L.

CHLRIDE OF LIME

Adams, Webster & Co.
Clements, S. G., & Co.
Government Sanitary Co.
National Chemical Co.

CHLORODYNE

Davenport (Browne's)
Towle, A. P. & Son

CHLOROFORM, &c.

Duncan, Flockhart & Co.
Greeff, R. W., & Co.
Macfarlan, J. F., & Son
Smith, T. & H., & Co.
Wright Layman & Umney
Zimmermann, A. & M.

CITRIC ACID
Hassall & Co. (Phospho)

COCAINE-HYDRO.
Howards & Sons

COCA WINE
Armbrecht, Nelson & Co.
French Hygienic Soc.
Jozeau, Gabriel
Mariani & Co.

COCOA & CHOCLTE
Cadbury Bros.
Christy & Co.
Fry & Sons
Rowntree & Co.

COD-LIVER OIL
Allen & Hanburys
Burroughs, Wellcome & Co.
Evans, Sons & Co.
Greeff, R. W., & Co.
Hill, A. S., & Son
Jackson, W. & H.
Lofoden Cod Liver Oil Co.
Lofthouse & Saltmer
Smith, T. J.
Southall Bros. & Barclay
Woolley, Sons & Co.

COFFEE
Symington, T., & Co. (Coffee Essence)

COLPSIBLE TUBES
Betts & Co.
Brooks, Peel & Co.
Sauders, H. G., & Son

COMP. MEDICINES
Allen & Hanburys
Blyton, Astley & Co.
Burroughs, Wellcome & Co.
Fuerst Bros.
Hooper, B., & Co.
Leo & Co.
Lloyd, T. H., & Co.
Wyleys & Co.

CONCENT. LIQS.
Evans, Sons & Co.
Fletcher, Fletcher & Stevenson
Lloyd, T. H., & Co.

CONFECTIONERY
Blyton, Astley & Co.
Gibson, R., & Sons
Kerfoot, T.
Pascall, J.
Southwell, C., & Co.
Warrick Brothers

CORN CURES
Seabury & Johnson (Plasters)
Thompson, M. F.

COTTON WOOL
Haynes, G., & Co. (Absorbent)
Robinson & Sons (Absorbent)
Sanger, J., & Sons
Seabury & Johnson

CRSHD LINSEED
Graham, W., & Co.
Mumford, S. G.

DENTIFRICES
Eau de Botot
Evans, Sons & Co.
Fontiman & Co.
Jewsbury & Brown
Lakeman, J. J.
Quelch, H. C.
Robertshaw, H. A., & Co.
"Salvine" Co.
Stevens, P. A.
Sutton, O., & Co.
"The Alexandra" (Ziemer)
Thompson & Capper
Warrick Bros.
Wilson, A.
Woods, W. (Areca Nut)

DISINFECTANTS
Adams, Webster & Co.
Crown Chemical Works
Government Sanitary Co.
Grindley & Co. (Lim.)
Jeyes' Fluid
National Chemical Co.
Sanitas Co.
Seabury & Johnson
Staples Bros. & Co.

DOG MEDICINES
Spratts Patent (Lim.)

DRUGGISTS' SUN.
Ayrton & Saunders
Bailey, M., & Co.
Barclay & Sons (Limited)
Evans, Lescher & Webb
Evans, Sons & Co. (Savars)
Fordham, W. B., & Sons (Lim)
Gilbertson, H., & Sons
Hill, A. S., & Son
Hockin, Wilson & Co.
Idris & Co.
Jackson, W. & H.
Kay Bros. (Lim.)
Lynch & Co.
Matthews, S. T., & Co.
Maw, S., Son & Thompson
May, Roberts & Co.
Newbery, F., & Sons
Quelch, H. C.
Rankin, W., & Sons
Sanger & Sons
Schutze & Co.
Taylor, A. J., & Co.
Thompson, Walters, Hole & Co. (Lim.)
Tidman & Son
Toogood, W.
Wood, Vincent

DRUG GRINDERS
Jordan & Co.

DRUMS
Berger, F.

EAU DE COLOGNE
Farina, J. M.
Martin, Maria (Nun)

ELASTIC HOSIERY
Wood, V.

ELECTRIC APPAR.
Darton, F., & Co.
Gent & Co.
Lancaster, J., & Son
Orme &

EMBROCATION
Burn, H.
Elliman, Sons & Co.

ENEMAS
Evans, Sons & Co.
Sanger & Son

ENGRAVERS
Barker, W., & Son
Corsan, J. R.

ESSENCES
Beckett, W.
Boehm, F.
Berger, F.
Bratby & Hinchliffe (Lim.)
Burgoyne, Burbidges & Co.
Bush, Son & Co.
Bush, W. J., & Co.
Butler, T. E., & Son
Cummock, J.
De Carle & Son
Goodall, Backhouse & Co.
Hay, W.
Idris & Co.
May & Baker (Lim.)
Millar, A., & Co.
Newball & Mason
Oldfield, Pattinson & Co.
Stevenson & Howell
Tyrer, P. (Anchovies)
Tyrer, T., & Co.
Woolley, Sons & Co.

ESSENTIAL OILS
Berger, F.
Boehm, F.
Bush, W. J., & Co.
Bush, W., Son & Co.
Clay, Dod & Co.
Cocking & Co. (Japan Peppermint)
Cummock, J.
Drysdale, J. W., & Co.
Evans, Sons & Co.
Hodgkinsons, Treacher & Clarke
Largen, G. W.
May & Baker (Lim.)
Schlesinger, L.
Stevenson & Howell
Symes & Co.
Treatt, R. C.
Vogt, G., & Co.
Warrick Bros.
Wright, Layman & Umney

ETHER
Duncan, Flockhart & Co.
Howards & Son
May & Baker (Lim.)
Robbins, J., & Co.
Tyrer, T., & Co.
White, A., & Sons
Woolley, Sons & Co.
Wright, Layman & Umney

EXTRACTS, FLUID
Allen & Hanburys
Barber, G., & Co.
Burgoyne, Burbidges & Co.
Dakin Bros.
Evans, Sons & Co.
Fletcher, Fletcher & Stevenson
Hearon, Squire & Francis
Hooper, B., & Co.
Lloyd, T. Howard & Co.
Moss & Co.
Potter & Clarke
Vogt, G., & Co.
Wright, Layman & Umney

EXTRACT MEAT
Australian Meat Co.
Bovril (Lim.)
Brand & Co.
Denaeyer's Peptone and Extract of Meat Co. (Lim.)
Liebig Co.
Liquor Carnis Co. (Lim)
Mason, G., & Co. (Lim.)

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Gilbertson, H., & Sons
Hearn, E. A., & Co.
Hockin, Wilson & Co.
Jackson, W. & H.
Kilner Bros.
Lynch & Co.
Marriot, E., & Co.
May, Roberts & Co.
Maw, S. Son & Thompson
Thompson, Walters, Hole & Co. (Lim.)
Toogood, W.

FILTERING
Fordham, W. B., & Sons (Ld.)
Silicated Carbon Filter Co.

FLY PAPERS
Biddles, W. B.
Blake & Mackenzie
Ford, Shapland & Co.
Tunbridge & Wright
Wilson, S.

FOOD (Infants' & Invalids')
Allen & Hanburys
Baelz, R., & Co.
Brand & Co.
Goodall, Backhouse & Co.
Hearon, Squire & Francis
Liebig Co.
Liquor Carnis Co. (Lim.)
Mottershead & Co. (Benger's Natural Food Co.
Nestlé, H. (Food)
Ridge, Dr.
Savory & Moore
Sylking & Co.

FORMULA
Brooks, T.

INGER ALE
Hay, W. (Essence)
Mills, R. M., & Co.

GLUE
Fordham, W. B., & Sons

GLYCERINE
Boehm, F.
Fink & Co.
Fuerst Bros.
Greeff, R. W., & Co.
Lofoden Cod Liver Oil Co.
Price's Candle Co.
Taylor, A. J., & Co.

GRANULAR PREP.
Bishop, A., & Sons
Blyton, Astley & Co.
Curtis & Co.
Evans, Sons & Co.
Hearon, Squire & Francis
Hill, A. S., & Son
Kerfoot, T.
Wright, Layman & Umney

GUM
Fink & Co. (Arabic, &c.)
Greeff, R. W., & Co.
Hyde, Nash & Co.
Levermore, Aug., & Co.
Taylor, A. J., & Co. (Arabic, &c.)

HAIR PREP.
Chesebrough Mnfg. Co.
Edwards & Co.
Truefitt, H. P. (Lim.)

HERB BEER EXTS
Lakin, W. H.
Newbal & Mason
Oldfield, Pattinson & Co.
Potter & Clarke

HERBALISTS
Newball & Mason
Potter & Clarke

HOMŒOPATHIC
Keene & Ashwell
Leath & Ross
Thompson & Capper
Watson & Wates

HOSPITALS
London Homœopathic

HYPOPHOSPHTES
Duncan, Flockhart & Co.
Fellows
Fletcher, Fletcher & Co.
Symes & Co.
Typke & King
Tyrer, Thomas, & Co.

INHALERS
Anderson & Adams
Spirone, Co., The
Toogood, W.

INK [See Marking Inks]
Bewley & Draper

INSECTICIDES
Keating, T.
Maw, S., Son & Thompson
May, Roberts & Co.
Sanford & Co.
Steiner & Co.
Thompson, Walters, Hole & Co. (Lim.)
Vogt, G., & Co.

INSURANCE
London and Lancashire Fire Insurance Co.

KETCHUP
Tyrer, P.

KOLA
Armbrecht, Nelson & Co.
Christy, T., & Co.
Thompson, M. F.
Van Hargau, J.

LARD
Ewen, J., & Sons

LIME JUICE
Evans, Sons & Co.
Idris & Co.
Riddle, A., & Co.

LNSEED POULTCE
Seabury & Johnson

LINT
Liverpool Lint Co.
Maw, S., Son & Thompson
Newsome, C.
Robinson & Sons
Seabury & Johnson

LOZENGES
Allen & Hanburys
Blyton, Astley & Co.
Gibson, R., & Sons (Manfrs.)
Hill & Son
Kerfoot, T.
Pascall, J.
Raimes & Co.
Stern, G. & G.
Warrick Bros.

MACHINERY
Burroughs, Wellcome & Co.
Foster, F.
Holroyd, J., & Co. (Lim.)
Molin, C.
Ohlson, A.
Pontifex & Wood (Lim.)
Werner & Pfleiderer

MAGNESIA
Bush, W., Son & Co.
Dinneford & Co.
Evans, Sons & Co.
Greeff, R. W., & Co.
Henry, T. & W. (Calcined)
Hill & Sons, A. S.
Kerfoot, T. (Citrate)
Washington Chemical Co.

MALT EXTRCT, &c.
Allen & Hanburys
Baelz, R., & Co.
Burroughs, Wellcome & Co. (Kepler's)
Hearon, Squire & Francis
Reade Bros. & Co. (Biscuits)
Wyleys & Co.

MANICURE PREPARATION
Dr. Paul's

MARKING INKS
Barber, G., & Co. (Crimson)
Hicklsson, J.
Marx, M. & E.

MEDICINE CHSTS
Day, Son & Hewitt (Veterinary)
Day & Sons (Veterinary)

MENTHOL
A 1 Menthol Depot, A. W. Shirley, Proprietor.
Cocking & Co.
Evans, Sons & Co.
Hockin, Wilson & Co.
Seabury & Johnson
Thompson, Walters, Hole & Co. (Lim.)
Tyrer, P.

MERCURIALS
Fuerst Brothers
Howards & Sons
May & Baker (Lim.)
Tyrer, Thomas, & Co.

METHYLATED SPIRITS
Boord & Son
Burrough, J.
Harvey, J. & W., & Co.
Jones & Co.
Phillips, G., & Co.
Smith, S., & Co.

METHYLENE
Robbins, J., & Co.

MICROSCOPES
Darton, F., & Co.
Perken, Son & Rayment

MILK
Nestlé, H. (Condensed)

MIXING MACHINERY
Gardner, W.
Werner & Pfleiderer

MORPHIA
Macfarlan, J. F., & Co.
Smith, T. & H., & Co.

OILS, PAINTS, &c.
Hugh Highgate & Co.
Fox, W., & Sons

OINTMENT BASES
Burroughs, Wellcome & Co.
Chesebrough (Vaseline)
Grindley & Co. (Petroleum Jelly)
Reade Bros. & Co.

OPTICIANS
Botwright & Grey
Darton, F., & Co.
Lancaster & Sons
Perken, Son & Rayment
Raphael & Co.

OTTO OF ROSE
Fuerst Bros.
Moryoseph, A.
Treatt, R. C.

PAPAIN FINKLER
Kuhn, B.

PATENT AGENTS
Horn & Son
Thompson, W. P., & Co.

PATENT MEDCNS
Armbrecht, Nelson & Co.
Atkinson & Barber (Infant Preserv)
Barclay & Sons (Lim.)
Beecham, T. (Pills)
Crouch, F. B.
Edwards & Son
Evans, Lescher & Webb
Penning's (Powders)
Globe Chemical Co.
Goodall, Backhouse, & Co.
Guy's Tonic
Holloway (Pills and Oint.)
Lalor (Phosphodyne, &c.)
Lamplough, H. (Lim.)
Lincoln (Clarke's Mix.)
May, Roberts & Co.
Newbery & Sons
Radam's Microbe Killer Co. (Lim.)
Roberts & Co. (Foreign)
Sequah (Lim.)
Sutton, W., & Co.
Thompson, Walters, Hole & Co. (Lim.)
Vogeler, The Charles A., Co.
Wilcox & Co.
Wilson, A. (Bunter's Nervine)

PEPPERMINT OIL
Cocking & Co.

PEPSINE, &c.
Burroughs, Wellcome & Co.
Chassaing & Co.
Fletcher, Fletcher & Stevenson
Greeff, R. W., & Co.
Morson, T., & Son
Newbery, F. & Sons (Ingluvin)
Storn, G. & G.
Warner & Co. (Ingluvin)

PEROX. OF HYDR
Robbins & Co.

PETROLEUM
Grindley & Co. (Jelly)
Snowdon, Sons & Co. (Jelly)

PERFUMERY, FANCY SOAPS
Bayley & Co.
Blondeau & Cie.
Boehm, F.
Burroughs, Wellcome & Co.
Chesebrough Mnufctring Co.
Chiswick Soap Co.
Coward, G. F., & Co.
Durrant, Geo. [Ewen (Soaps,
Evans, Sons & Co.
Ewen, J., & Sons
Farina, J. M.
Giraud Fils
Groensill, T. S., & Son
Johnson & Co.
Legrand, L.
Mann, C. A., & Co.
Mourard, J.
Mulhens, F.
Newbery & Sons (Berdoes)
Oftinger, E.
Pears' Soap
Price's Patent Candle Co.
Rosmarine Manufg. Co.
Sainsbury, S. (Lav. Water)
Schlesinger, L.
Shirley, A. W.
Thompson, Walters, Hole & Co. (Lim.)
Tidman & Son
Treatt, R. C.
Truefitt, H. P. (Lim.)
Warrick Brothers
West, T. (Okell's Mona)
Woolley, Sons & Co. (Powder)

PHARM. PREPS.
Allen & Hanburys
Barron, Harveys & Co.
Berger, F.
Boehm, F.
Burgoyne, Burbidges & Co.
Burroughs, Wellcome & Co.
Chassaing & Co.
Duncan, Flockhart & Co.
Elton & Co.
Fellows
Ferris & Co.
Fletcher, Fletcher & Co.
Giles Schacht & Co.
Greeff, R. W., & Co.
Hearon, Squire & Francis
Hewlett & Son
Hill, A. S., & Son
Hooper, B., & Co.
Howards & Sons
Jeyes Sanitary Compounds Co
Jordan & Co
Keith & Co. (Conc. Tinctures).
Lambert Pharmacal Co
Largen, G. W.
Layng, R. C.
Martindale, W.
May & Baker (Lim.)
Moryoseph, A.
Moss, J., & Co.
Potter & Clarke
Rankin & Borland
Ricqles & Co.
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Toogood, W. (Coater)
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Of all Wholesale Houses.

SAMPLE BOXES, Containing Powder, Paste, & Liquid per 8/- doz.

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See pages 169–172 *WINTER ISSUE, January* 31*st*, 1891.

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Will purify and beautify the Teeth with a pearly whiteness; polish the enamel; prevent tartar; destroy all living germs, and keep the mouth in a delicious condition of comfort, health, purity, and fragrance. Non-gritty, and absolutely pure and harmless to use. Price One Shilling, in handsome Enamel Box.

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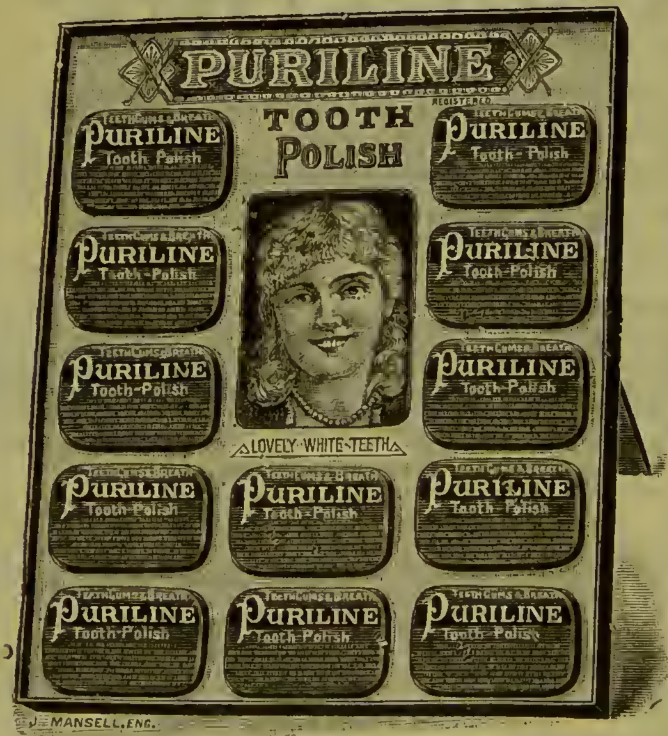

The Court Circular says:—"'Puriline' emanates from the laboratory of 'Bunter's Nervine' fame. Bunter's previous preparations for the teeth have received such high encomiums from medical men that it is not surprising that this latest production should have received the recognition and approval of those best qualified to pronounce on its merits."

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SOFT SILK FLEXIBLE CATHETER, GUARANTEED WITH WOVEN EYES.

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THE VERY FINEST.

Pod, 95/-; Grain, 110/- per oz. NET CASH.

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WHY SHOULD THE "McK. & R." PILLS BE PRESCRIBED?

1. Because they are prepared from materials of the highest quality only.
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5. Because the coating of *pure transparent gelatine* preserves the contents from oxidation.
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Aloes, all the B.P. combinations ..... 5 gr.
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  Saponis Pulv. | Theriaca, āā ..... 1 gr.
Aloes and Nux Vomica—
  Aloes Soc. ..... 1½ gr. | Ext. Nucis Vom. ..... ½ gr.
Aloin ..... 1/10, ¼, ½, 1 gr.
Aloin, various combinations.
Anti-Dyspepsia (Fothergill)—
  Strychninæ ..... 1/30 gr. | Pulv. Ipecac. ..... 2-3 gr.
  Pulv. Piper Nig. ..... 1½ gr. | Ext. Gent. ..... 1 gr.
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Asafœtida, U.S. and B.P. ..... 5 gr.
Atropine ..... 1-100, 1-300 gr.
Blue Pill, B.P. ..... 1, 2, 3, 5 gr.
Blue Pill, with Colocynth and Hyoscyam. ..... 5 gr.
Calcium Sulphide ..... 1-10, 1-4, 1-2, 1 gr.
Calomel, Colocyn., and Hyosc. ..... 5 gr.
Calomel Co., B.P. ..... 5 gr.
Camphor and Hyoscyam. ..... 2 gr.
  Camphoræ. | Ext. Hyoscy., āā ..... 1 gr.
Cannabis Indica ..... 1-4, 1-2 gr.
Cascara Sagrada ..... 3 gr.
Cathartic Comp., U.S.P.
  Ext. Jalap ..... 1 gr. | Hyd. Subchlor. ..... 1 gr.
  Ext. Coloc. Co. ..... 1 1-3 gr. | Gambog. ..... 1-4 gr.
  N.B.—The ready solubility of the "McK. & R." Pills is readily proved by taking a dose of these.
Colocynth Comp., B.P. ..... 4, 5 gr.
Colocynth, other combinations.
Copaiba Compound—
  Cubebæ Pulv. ..... 2 gr. | Mass. Copaib. ..... 1 gr.
  Ferri Sulph. Exsic. .. 1-2 gr. | Tereb. Venet. ..... 1 1-2 gr.
Corrosive Sublimate ..... 1-30, 1-20, 1-10 gr.
Croton Oil ..... 1-2 gr.
Diuretic—
  Ext. Buchu, Potass. Nitrat. ..... 1 gr.
  Scillæ Pulv. ..... 1-2 gr.
Emmenagogue—
  Ferr. Sulph. Exsic. ..... 1 1-2 gr.
  Thus. American ..... 1 1-2 gr.
  Aloes Socot. ..... 1-2 gr.
Ergotin ..... 3 gr.
  N.B.—Each Pill = 30 gr. ergot or 30 ms. fl. extract. This form is more reliable and uniform in effect and more agreeable than the liquid preparations.
Euonymin ..... 2, 3 gr.
Iodoform and Iodoform with Iron ..... 1 gr.
Ipecac. ..... 1-4, 5 gr.
Ipecac. Co. ..... 5 gr.
Ipecac. and Squill, B.P ..... 5 gr.
Iron Pill, B.P. Add. ..... 3, 5 gr.
Iron Arseniate ..... 1-8 gr.
Iron reduced by Hydrogen (Quevenne) ..... 1, 4 gr.
Iron and Quinine Citrate ..... 2 gr.
Laxative, Vegetable—
  Res. Podoph. | Ext. Coloc. Co. ..... 1 gr.
  Ext. Hyoscy. | Jalapæ
  Ext. Tarax, āā ..... 1-4 gr. | Res. Leptand. āā ..... 1-2 gr.
  | Ol. Menth. Pip.
Mercury, Biniodide ..... 1-16 gr.
Mercury, Proto-iodide ..... 1-20, 1-16, 1-8, 1-4 gr.
  N.B.—Made from the absolutely pure *yellow* impalpable powder, free from mercury and from biniodide.
  So-called "green" proto-iodide contains uncombined mercury.
Mercury, with Chalk ..... 1 gr.
Morphine Muriate ..... 1-8, 1-4 gr.
Nitro-Glycerine ..... 1-200, 1-100, 1-50 gr.
Opium ..... 1 gr.
Opium and Camphor ..... 1 gr.
  Opii Pulv. ..... 1 gr. | Camphoræ ..... 2 gr.
Pepsin, Pure ..... 1 gr.
Phosphorus ..... 1-100, 1-50, 1-30 gr.
  N.B.—In no kind of Pill are the advantages of the "McK. & R." method better exemplified or more in request. No other brand of Phosphorus Pills is equally reliable for the administration of the unoxidised medicament.
Phosphorus and Iron—
  Phosphor. Pur. ..... 1-50 gr. | Ferr. Redact ..... 2 gr.
Phosphorus, Iron, and Quinine—
  Phosphor. Pur. ..... 1-100 gr. | Ferri Carb. ..... 1 gr.
  Quininæ Sulph. ..... 1 gr.
Phosphorus and Nux Vomica—
  Phosphor. Pur. ..... 1-50 gr. | Ext. Nucis Vom. ..... 1-4 gr.
Phosphorus and Quinine—
  Phosphor. Pur. ..... 1-50 gr. | Quininæ Sulph. ..... 1 gr.
Phosphorus and Valerianate of Zinc—
  Phosphor. Pur. ..... 1-50 gr. | Zinci Valer. ..... 1 gr.
Picrotoxin ..... 1-80 gr.
Podophyllin ..... 1-8, 1-4, 1-2 gr.
Quinine, Bisulphate ..... 1-4, 1-2, 1, 2, 3, 4, 5 gr.
Quinine, Sulphate ..... 1-4, 1-2, 1, 2, 3, 4, 5 gr.
Quinine Co. (Anti-Malarial).
  Largely prescribed in America with excellent results.
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Rhubarb with Blue Pill ..... 5 gr.
Salicylic Acid ..... 2, 5 gr.
Soap Comp., B.P. ..... 5 gr.
Squill Comp., B.P. ..... 5 gr.
Strophanthus ..... 1-20, 1-4 gr.
Strychnine ..... 1-50 gr.
Tonic Laxative (Fothergill)—
  Quininæ Sulph. ..... 2-3 gr. | Ferri Redact.
  Strychn. ..... 1-30 gr. | Ext. Bellad., āā ..... 1-4 gr.
Valerianates, Iron, Quinine, and Zinc.
Warburg's Tincture and the same without Aloes.
  Each Pill = 1 fl. drm. of the Tincture.
Zinc Phosphide ..... 1-4, 1-2 gr.
Zinc Valerianate ..... 1 gr.

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The British Medical Journal, June 28, 1890, says:—"'PEPSALIA' possesses a high degree of digestive power. We have satisfied ourselves that it affords a strong aid to digestion. The claims put forward for 'PEPSALIA' are justifiable."

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000	5/	———	
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0½		" 6 - 7½	" " "
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1½	6/	" 10½-15	" " "
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ESTABLISHED 1859.

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A FIRM of chemists and dealers in explosives at Chesterfield have been prosecuted under the Explosives Act, and fined for careless storage of a quantity of detonators.

SUMMARY.

WE record with much regret the death of our valued correspondent in Paris, Mr. J. L. A. Creuse, formerly the editor of the *Druggists' Circular* of New York. A portrait and a short sketch of Mr. Creuse's career will be found in this journal.

DR. HUGGINS, the president of the British Association, gave a very learned address as president on astronomical subjects, treating particularly the spectroscopic discoveries of recent times. Some wonderful facts were recorded, and we have endeavoured to pick out from the address the most interesting bits.

THE practical abandonment of the drug-sales in Bank Holiday week occasioned a large accumulation of supplies this week, and auctions were exceptionally heavy. The demand was fairly spirited for the goods offered on Thursday. Otto of rose has more than justified our prognostication of an advance, and one point lower has been reached for bromine, the German quotation being now 13*d.*

MR. TYRER, the ex-Chairman of the Chemical Section of the London Chamber of Commerce has favoured us with an official interpretation of the recent methylated-spirits order which supports statements previously published that users of methylated spirits are not required to employ the deteriorated article, and makes it clear that a retailer may also keep a stock of the better article for use in the preparation of permitted compounds.

THE BRITISH PHARMACEUTICAL CONFERENCE, which was held its annual session at Cardiff this week, under the presidency of Mr. Martindale, is fully reported in this issue. Eighteen scientific papers of fully average value were contributed, and these were well discussed. Readers who have not time to wade through the full report will find the proceedings summarised in our editorial article, in which all the points of importance are brought out.

THE Pharmaceutical Society of Ireland has succeeded in suits against four traders in Dublin who had infringed the Pharmacy Act by compounding medical prescriptions, they not possessing the necessary qualification. The defence in two cases was that the compounding part of the business belonged to a qualified pharmaceutical chemist (a former member of the Council of the Pharmaceutical Society), and his name appeared on the labels; but the magistrates found that the parties prosecuted kept open shop for compounding, and did, in fact, compound the medicines. Thirty pounds in fines was the net result of the day's work.

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Proctor's "Pharmaceutical Testing." (176 pages.) 2*s.* 6*d.* by post, 2*s.* 9*d.*

English News.

The Newcastle Chemical Company have struck a seam of coal two feet thick at a depth of 1,900 feet from the surface, at Cowpen, near Middlesborough. The coal has been analysed and found to be of a very good quality. The firm were boring experimentally with the expectation of finding natural gas. It is believed there is a considerable quantity of coal beneath the seam.

St. Helens Pill-makers' Holiday.—The employés of Mr. Thomas Beecham, the well-known pill manufacturer, of St. Helens, were entertained to their annual holiday on Saturday last, when Morecambe was visited. The party, numbering about 70, were conveyed in saloon carriages, and left St. Helens by the 6.43 A.M. train. Favoured with fine weather, the outing was very much enjoyed. As on all former occasions, the entire expenses were defrayed by Mr. Beecham.

Dispute at the Flint Chemical Works.—The dispute with the bricklayers' labourers, which threatened to develop into a general stoppage of the Flint Chemical Works, has been settled. Mr. P. J. King, president of the Chemical and Copper Workers' Union, proceeded to Flint, but the manager of the works refused to treat with him. Mr. King, however, directed the line of policy upon which the men acted, with the result that concessions were made to both brick-setters and labourers.

Marriage Festivity.—In celebration of the marriage of Mr. J. W. Bostock, pharmaceutical chemist, of Ashton-under-Lyne, the bridegroom's father, who is a wholesale druggist at Ashton, took his employés, with their wives and friends, for a trip to Buxton on August 8, where a high tea was served and a very pleasant evening spent. The bride and bridegroom were toasted in poetry by Mr. Richard Green, the senior traveller of the firm.

Holiday Outing.—On Saturday last the employés of Messrs. Harker, Stagg & Morgan, wholesale and export druggists, Laurence Pountney Lane, E.C., made an excursion to Theyden Bois, on the outskirts of Epping Forest. The firm was represented by Mr. S. Morgan, the travellers by Mr. H. E. Webster. A most enjoyable day was spent, cricket and other games being indulged in. A substantial meal was provided, at the close of which the toasts of "The Firm" and "The Travellers" were drunk with great enthusiasm.

An Overdose of Morphia.—Dr. Joseph Stephens, a well-known Brighton physician, has met his death under very distressing circumstances. Amongst other ailments, he suffered from insomnia, and had consulted a medical gentleman as to a remedy. On Thursday he was found in bed insensible. Five doctors attended him, and succeeded in restoring him to consciousness, but later in the day a relapse occurred, and he died. At the inquest on Saturday the medical evidence showed that death resulted from an overdose of morphia, which, it was supposed, he had taken as a remedy for insomnia. A verdict of "Death from misadventure" was returned.

Laudanum-poisoning.—Mr. Hodgson, manager for Mr. Sanderson, chemist, Normanby, Durham, sold 4 oz. of laudanum to a farmer and mineral-water maker, named Richardson, who said he wanted it to apply to a wound on a foal. He seems to have taken a large quantity of it himself, and to have died. The jury thought it was taken in mistake, and found a verdict to that effect. The coroner said more deaths occurred from the taking of laudanum than from any other poison, and he thought that when any person was supplied with it it should be entered in a book, as was the case in regard to a number of other poisons.

Carbolic acid Poisoning.—Some carbolic acid was used for disinfecting purposes at the Eastern Counties Asylum for Idiots at Colchester, and some of it was accidentally left within reach of a patient named Alice May Reeder. At about two o'clock in the morning a nurse heard a noise in one of the dormitories, and saw deceased holding in her hand a mug. Her mouth was burned, and she had evidently been drinking carbolic acid. Medical aid was promptly summoned; but the patient died two hours afterwards.—John Thomas Burrows, porter at the St. Austell Workhouse, poisoned himself with carbolic acid last week, after having first tried in vain to drown himself in a tank. He had been drinking heavily, and was much depressed.

A Constable's Promptitude Commended.—Richard William Wilson, aged 48, painter, of Rupert Road, Upper Holloway, attempted to kill himself by taking a quantity of phosphor-paste. Constable Henry Warner, 317 Y, was called in, and applied an emetic of mustard and water, which had the desired effect. The prisoner attributed his act to domestic trouble and drink. Mr. Corser: You owe your life to the prompt action of the policeman. I will let you go now, after the week's remand, and hope it will be a lesson to you. Mr. Haden Corser marked the charge-sheet as follows:—"The constable, 317 Y, deserves great praise for so promptly sending for mustard and water and administering the same as an emetic. In all probability the man's life was saved by it."

A Charge of Chloral poisoning.—William A. Wynne, described as a dispenser, residing at 42 Golborne Road, Westbourne Park, has been charged at the West London Police Court with causing the death of his wife, Clara Elizabeth Wynne, aged 27, by administering to her chloral. Evidence was given on Saturday last of the way in which the prisoner treated his wife, who was found dead in the room. A bottle labelled "Laudanum," and another labelled "Chloral," were found in the room. When Wynne was arrested on suspicion of causing the death of his wife, he said: "I deny it *in toto*. She took an overdose of chloral hydrate. I left the house when I saw she was lying dead. She has been constantly in the habit of taking laudanum and chloral." He was remanded for a week.

Arsenical Wall-papers have been charged with having caused the death of a gentleman at Walberton, near Arundel, and much interest was excited in the case. Dr. Evershed, who attended the deceased, was confident that both he and his daughter, who had also been ill, suffered from the effects of arsenic, which he attributed to either the papers or to the carpet. The viscera of the deceased were analysed by Dr. Stevenson, who found traces of arsenic, but not sufficient to cause death. Curiously, the wall-papers were not examined. The jury found that the death was caused by failure of the heart's action; but Dr. Evershed still appeared convinced that the arsenic had caused the death, for he stated that probably sea sand had been used in building the house, and had acted on the paper so as to give out arseniuretted hydrogen, a most deadly poison.

Cricket and Tennis.—The Midland Counties Chemists' Association had some tennis-matches on Wednesday instead of cricket. Mr. and Mrs. T. B. Cattell won the ladies and gentlemen's match, Mrs. S. Taylor carried off the ladies' match, and Mr. G. T. Cattell that for gentlemen simply.—Next Thursday, August 27, the Sheffield chemist-cricketers are to visit Birmingham for a return match. Brakes will be at the Colonnade Hotel at 12.45, to convey the teams and any friends who may like to join to the Langley Ground. Play will commence at 1.30. There will be a meat-tea at the Colonnade Hotel at 7.30, after which a smoking-concert will be held. Any member of the drug-trade will be welcome at these meetings, particulars of which can be obtained from Mr. Charles Thompson, 159 Stoulford Road, Sparkbrook.

British Dental Association.—The annual meeting of this society has been held this week, in London, under the presidency of Mr. J. Smith Turner. Mr. W. B. Paterson, the honorary secretary, reported that the past year had been distinguished by the successful prosecution of certain offenders against the Dentists Act. One was a person practising under a diploma (D.D.S. New York) not recognised by the Medical Council. Mr. Turner's presidential address commenced by a scientific and original consideration of the factors, evolutionary, educational, and nutritive, of the obvious deterioration of the teeth observable in modern times. The speaker blamed the liberties we have, in the name of spurious civilisation, taken with Nature for much of our present dental distress. The teeth were being starved by foolish and inappropriate diet. The second half of the president's address consisted of a *resumé* of the progress and present position of the British Dental Association. It was resolved to hold the next annual meeting at Manchester, under the presidency of Mr. Quinby.

A Doctor's Mistake.—On Monday, Mr. F. Price, coroner, held an inquest concerning the death of Lavinia Turner, three years of age, daughter of a fishmonger, residing at 14 Alma Square, Stretford, Manchester. The mother had taken the child, on August 5, to the dispensary of Dr. Mayer Joseph Bernstein, in the Hyde Road, for an eruption on the skin. He gave her medicine and lotion. On August 15 she went again with the child and took the medicine-bottle. The doctor took the bottle into an adjoining room, returned with it filled, and gave it to her. The contents of the bottle were of the same colour as on the previous occasion. When she gave a dose to the child, the latter complained of its nastiness. Soon after she complained of weariness, and then followed convulsions. The mother took the child to Dr. Whitfield's, where she died. Dr. Whitfield gave evidence, and said the child died from the effects of strychnine. He had sent a portion of the contents of the bottle of medicine to Mr. C. Swinn, chemist, for the purposes of analysis. He saw Mr. Swinn make the test, and it produced the reaction of strychnine. P.S. George Smith said he went to Dr. Bernstein on Sunday morning, and asked him if he gave Mrs. Turner a bottle of medicine, a bottle of lotion, and a box of ointment, and he replied that he did. Witness told him what had occurred. Dr. Bernstein said, "Oh, dear, that is very bad. I cannot understand how that is; I certainly put the medicine up with my own hands. It is certainly very serious. I do not know how strychnine could be in it. I gave her a solution of soda." He then showed witness his book, and added, "I never intended to give her strychnia. If there is strychnia in the medicine it is a mistake. I make no further statement now." Witness saw the name "Cissy Turner" in the book, and also "S. Soda," which Dr. Bernstein said meant solution of soda. Witness asked Dr. Bernstein to let him look into the laboratory where he dispensed his medicines, and he accompanied witness there. He showed witness a bottle labelled "Potass. Bi-carb.," and said, "This is the soda," and also showed him the bottle "Liqu. Strych.," and underneath a red label containing the word "Poison." The bottles were about a yard apart. The bottle containing the soda was standing on a table under the window, and the bottle containing the strychnine was on the window bottom. Dr. Bernstein, in answer to the coroner, said he wished to give evidence. Having been cautioned by the coroner, he was sworn, and said he was a bachelor of medicine, and surgeon, and also held a degree in hygiene. I recollect (he continued) the patient being brought to me on Saturday last. The disease for which I was treating her seemed to be progressing very well, and I repeated the mixture which she had had before, which was simply a solution of bicarbonate of soda, with burnt sugar to give it a colouring. I have no recollection of giving anything else. I have nothing more to say. The evidence of the police-sergeant is correct. I do not believe that the bicarbonate of potash contains any strychnia. It is labelled "Potass.," but it is bicarbonate of soda really. The bottles have been in the position in which they were seen by the officer since I have been there and before I went there. The bottles containing poison were kept apart from the other bottles purposely. The coroner, in summing up, explained to the jury the circumstances which might make the case one of manslaughter, and, after deliberating in private, the jury returned a verdict of "Death by misadventure, by the administration of strychnine," and desired the coroner to censure Dr. Bernstein. The coroner, addressing Dr. Bernstein, said he had no doubt that his feelings would have been strongly wrought upon by that inquiry, and he hoped it would be a warning to him and to all other medical men who might read the circumstances of the case. That gentlemen in his position should keep poisonous medicines in bottles in close proximity to similar bottles containing medicines of an innocent nature was to him very strange. The jury desired to recommend to him and to all chemists and dispensers of medicine that they should keep poisons in bottles of a particular colour or particular make, so that poison could be at once detected. Such bottles should also be kept entirely away from other bottles. The jury had hesitated for a long time as to the conclusion to which they should come, and it had not been without considerable argument amongst themselves, and explanation from him (the coroner), that they had at length come to a unanimous verdict of misadventure. Some of them were for returning a verdict of manslaughter, with which he should certainly not have quarrelled, because he thought it was time that such carelessness as that which had led to the present lamentable occurrence should be put a stop to. He was afraid, however, it could not be stopped except by the severe remedy of punishment, by committal to the assizes. Dr. Bernstein had narrowly escaped that penalty, and he trusted it would be a warning to him and to others. He was now at liberty, but he (the coroner) hoped the case would be a lesson to him as long as he lived.

IRISH NEWS.

The Potato-disease Cure.—The Irish Land Commission has arranged to supply a mixture of sulphate of copper and lime to farmers whose potato crops are affected with disease.

Death of an Apothecary.—The death is announced of Dr. Miles Vernon Bourke, L.A.H, of Limerick, at the age of seventy years. Dr. Bourke was one of the original members of the Pharmaceutical Society named in the Act of 1875.

Pharmaceutical Society of Ireland.—In the report of the August Council meeting, published on August 15, it was omitted to be stated that:—Mr. G. W. Camlin, 87 Donegal Pass, Belfast, was proposed for membership by the Vice-President, seconded by Mr. Lyons; and that Messrs. T. B. Gorman (Bangor). J. Shepherd (Derry), S. E. A. Acheson (Belfast), and J. P. Middleton (Dublin) were proposed as associate druggists by Mr. S. P. Boyd, seconded by Mr. Robinson.

The Society of Chemical Industry.—At a meeting of the committee appointed to receive the members of the Society of Chemical Industry on the occasion of their recent visit to Dublin, it was reported that, after deducting all expenses out of the total of receipts, which amounted to 466*l.* 13*s.*, there was a balance in hand of 41*l.*, which the committee recommended should be given to the fund for the erection of the new hall by the Institution of Civil Engineers. Dr. Emerson Reynolds, in moving the adoption of the report, said he had no doubt that if the meeting gave effect to the recommendation of the committee the new hall, when finished, would be placed at the disposal of the Irish section of the Society of Chemical Industry for the purpose of holding their meetings. The motion was seconded, and adopted.

Lead in Aërated Water.—At the Londonderry Petty Sessions, on August 10, Robert Porter, mineral-water manufacturer, Waterloo Street, Derry, was summoned for selling to an officer of the corporation some soda-water which, according to Professor Leebody's analysis, contained three-quarters of a grain of lead per gallon. The analyst, in his evidence, said he considered that if a person drank a bottle of soda-water such as the sample examined for twelve days in succession he would suffer from lead-poisoning at the end of the fortnight. In cross-examination, he agreed that the Londonderry manufacturers had to contend against the difficulty of the softness of the Derry water. There was no lead in the Derry water, but its softness rendered it more likely to dissolve lead. He presumed that the lead got into the water through the use of leaden pipes. New lead pipes would be more likely to give off lead than old ones. For the defence it was said that the defendant had been in business as a soda-water manufacturer for twenty years, and had always taken precautions to avoid the presence of impurities in his waters. He attributed the lead to the action of the corporation in putting on a water-meter with lead pipes. Mr. Porter distilled all the water used, and his machinery was coated with silver. After some disputing, the case was adjourned, to allow the city water, where it enters defendant's premises, to be analysed.

The quantity of phosphate mined and sold in South Carolina during the past few years has been continually increasing until it has now reached the figure of about 500,000 tons per annum. It is believed that 14,000,000 tons can still be obtained.

SCOTCH NEWS.

Accident at Ardeer Factory.—On Saturday, Mr. Archibald Hamilton, a chemist, was engaged in the laboratory when an explosion took place. He had the vessel containing the explosives in his left hand, which received a deep cut, and his face was also burned. The explosion was slight and entirely local, a few panes of glass being broken and other damage done in the laboratory. Mr. Hamilton was removed to Glasgow Infirmary, where his thumb and two fingers were amputated. It is thought his eyes are not seriously injured.

Accident in a Chemist's Shop.—Last Sunday evening Mr. John Nicol, chemist and druggist, 190 Dumbarton Road, Partick, accidentally overturned and broke a bottle containing some spirit of nitre, which the gas-jet on the counter ignited. The flames spread, setting fire to the floor and fittings of the shop. Before the local fire-brigade arrived Mr. Nicol endeavoured to arrest the progress of the flames, and was severely burned about the hands and body, his injuries being of so painful a nature as to render him unconscious. When the brigade arrived the fire was soon extinguished, but damage to the extent of about 140*l.* was done. Mr. Nicol is slowly recovering from his unfortunate accident.

Brechin Paupers and their Medicines.—A lively discussion occurred at the recent half-yearly meeting of the Brechin Parochial Board. Up to last year the board had paid 30*l.* each per annum to two medical officers, and the medicines had been bought from the druggists. It had been found that under that system the bills for medicines had increased rapidly, and an arrangement had been made to pay the medical officers 15*l.* each per annum extra, for which amount they were to supply the necessary medicines. Bailie Valentine now proposed a reversion to the old system. There was a lively discussion, and in the result 9 voted for each method. The chairman, who was the chief advocate of the contract with the medical officers, gave his casting vote in favour of his own views.

MR. J. L. A. CREUSE.

To a large circle of pharmaceutical friends in America and France, and to those in England who knew him by his work, the news of the death of Mr. Jules Leon Augustin Creuse will come as a sad surprise. Since 1885 Mr. Creuse had been the valued and skilful correspondent of The Chemist and Druggist in Paris, and there has been no section of our journal of which we have been more proud than that in which our late friend gave so concisely and gracefully the pharmaceutical news of France. His reports of the meetings of the Pharmaceutical Society of Paris, and occasional occurrences at the Academy of Sciences, were always made on the spot, and many a Paris pharmacien looked to the London Chemist and Druggist for the promptest reports of matters concerning his profession occurring in Paris.

Mr. Creuse was born in France on December 28, 1835. His college career was exceptionally brilliant, for he was inscribed "bachelier es lettres" of the University of Paris in 1852, and "bachelier es sciences" in 1853. He served his pharmaceutical stages with the eminent pharmaciens, MM. Robiquet and Binguet, but left France before reaching the age when he could take his diploma as a pharmacien. He spent about a year in London, and before he was 22 was proprietor of an elegant pharmacy in New York. He was successful in this capacity, but his health compelled him in a few years to seek a position of less confinement. Meanwhile, however—and it is indicative of the conscientious thoroughness with which he fulfilled every task—he qualified and graduated as a member of the College of Pharmacy of New York in 1862. For some years he was in the establishment of Messrs. Reed & Carnick, his particular duty being the conduct of their literary department. His exceptional ability as a writer brought him into association with Dr. Newton, the proprietor of the *Druggists' Circular* of New York, and early in the seventies he became associate editor, and subsequently for some years editor in chief of that well-known journal. Under Mr. Creuse's editorship the *Druggists' Circular* attained the largest circulation and the most influential position of any American newspaper connected with pharmacy. Mr. Creuse always retained a lively affection for the city where he made his home for so many years, and where he married a lady, also, like himself, of French family. But he suffered from rheumatism, and the climate of New York tried him severely. In 1884 he retired from active business life in America, and came to reside in Paris. There he has lived for the past half-dozen years, occupying himself with literary work, and enjoying, as a cultured amateur, the scientific privileges which are so abundantly provided for those who care for them in the French capital.

Mr. and Madame Creuse paid a visit to the United States last year, and our late friend returned to Europe apparently in the best of health. Early this year, however, a tumorous growth below the eye was regarded by the surgeons as serious, and several operations were effected. For a time it was hoped that a cure had been accomplished, and Mr. Creuse went to the south of France to regain strength by living in the sunshine. The cancerous growth, however, manifested itself again, and Mr. Creuse returned to Paris in June, doomed to die. He suffered but little pain, and has scarcely been conscious during the two months while he has been gradually sinking. His aged mother accompanied his wife in following the remains to Montparnasse Cemetery, where the deceased was laid to rest on Sunday last.

One of Mr. Creuse's friends sends us the following little character sketch of him, which gives an accurate idea of his personality:—

A modern Frenchman, and especially a Parisian, who had spent the best years of his life as a journalist in the United States, would naturally be expected to be imbued with the most advanced views on commercial and political subjects, to be modern to his finger-tips, and utterly devoid of all feelings of social and historical veneration. Nothing could be further from the truth with regard to the late Paris correspondent of this journal. Singularly conscientious and upright, markedly studious and painstaking in his habits, the natural bias of Mr. Creuse's mind was, perhaps, too strongly conservative for his American surroundings. Most men endowed with his knowledge and intellect would have hastened to swim on with the stream, made dollar-making the Alpha and Omega of their existence, and emerged from the struggle wealthy, envied, and successful. Not so Mr.

Creuse. Whether, upon closer acquaintance, business life repelled rather than attracted him, whether his American experience was not calculated to rouse to reaction rather than to touch sympathetically the strongest convictions of the man, may be left an open question. But though our late correspondent did not choose the path which would have led him on to the fortune his conspicuous abilities deserved, he undoubtedly selected that which proved most congenial to a man of his quiet, scholarly, and unassuming habits. No other career could have given him the happiness he found in the modest flat on the Boulevard St. Michel; in his daily communion with the learned professors of the Paris Ecole de Pharmacie, the hospitals, and the Sorbonne; in his walks through the gardens of the Pharmacy School and the Luxembourg, honoured and respected by all with whom he came in contact, ever courteous and obliging to those who sought his advice. Mr. Creuse loved to talk of his American experiences, and to indulge in a little good-natured raillery at Yankee dollar-worship and at the peculiar political methods of those American and French politicians whom, as a sworn enemy of charlatans, he despised and disliked. He was a keen observer, and possessed an extraordinary fund of scientific, social, and political information, not the less accurate because he seldom allowed it to be displayed on the surface.

Trade Notes.

Jeyes' Sanitary Compounds Company have been awarded a gold medal at the Jamaica Exhibition for disinfectants.

Messrs. Armbrecht, Nelson & Co. are distributing some pretty little xylonite book-markers and paper-cutters on which they advertise their coca wine.

Messrs. Burroughs, Wellcome & Co. took a large party of Hygienic Congressites to their works at Dartford on Saturday last, when a handsome luncheon was provided.

Messrs. Dakin Brothers, of Creechurch Lane, have been awarded a gold medal at the Jamaica Exhibition for their exhibit of drugs and chemicals.

A Diploma of Honour and gold medal have been awarded to Messrs. Warrick Brothers, at the Jamaica Exhibition, for their perfumery products there exhibited.

We are informed that Messrs. W. B. Fordham & Sons (Limited), of King's Cross, have become wholesale agents for the United Kingdom for the "Darkest England Lights" (matches), manufactured by the Salvation Army.

Messrs. Barclay & Sons (Limited), of 95 Farringdon Street, London, have just issued their net price-list for 1891. It contains 316 pages of catalogue and about 100 of advertisements. Besides proprietary medicines and druggists' sundries, a section for photographic requisites has been added this year.

We observe that Messrs. J. W. Drysdale & Co., 8 Creechurch Lane, E.C., call special attention this week to oil of *Eucalyptus oleosa* which they offer. This is the variety of oil which Mr. R. H. Davies showed, at the Cardiff Conference this week, to be rich in eucalyptol, the active constituent of official eucalyptus oil; and Mr. Martindale stated that, owing to its fine odour, it is the oil which is preferred for inhalations.

Gazette.

PARTNERSHIPS DISSOLVED.

Davis & Robinson, Sunderland, general medical practitioners.

Gibbs & Gurnoll, Ryde, chemists and druggists.

THE BANKRUPTCY ACTS, 1883 AND 1890.

Receiving Order.

Hinton, John, Stourport, chemist.

MARRIAGES.

[*Notices of Marriages and Deaths are inserted free if sent with proper authentication.*]

Bostock—Knight. — On August 5, at the Albion Congregational Chapel, Ashton, by the Rev. John Hutchison, John William Bostock, pharmaceutical chemist, son of Mr. William Bostock, wholesale chemist and druggist, of Sylvester House, Ashton-under-Lyne, to Emily, elder daughter of Jonas Knight, Esq , J.P., Spring Bank, Ashton-under-Lyne.

Enness—Vincent.—On Sunday, August 2, at St. John's Church, Fulham, Walter Frederick Enness, chemist, of Walthamstow, to Amy, daughter of the late Mr. George Vincent, of London.

Harley—Shine.—On August 11, at Christ Church, Cork, by the Rev. Canon Harley, uncle of the bridegroom, Frank Harley, M.P.S I., second son of the late Rev. John B. Harley, Rector of Ballinakill, co. Waterford, to Annie Fredricka Stephens, youngest daughter of the late Wm. Shine, Esq , Bandon.

Kirkup—Carr.—At St. John's Church, Newcastle-on-Tyne, on August 13, by the Rev. E. Lewis, George John Kirkup, chemist, to Ellen, youngest daughter of William Carr, both of that city.

Symes—Stanswood.—On August 18, at St. James's Church West Derby, by the Rev. Dr. Hyde, Charles Symes, Ph.D , of Ellerslie, West Derby, to Florence Gertrude, eldest daughter of William Henry Stanswood.

Tozer—Essery.—On August 18, at Hope Chapel, Ebrington Street, Plymouth, by the Rev. R. Waters, Mr. C. S. Tozer, of Tozer & Son, builders, Plymouth, to Miss Elizabeth Mary (Lizzie), eldest daughter of Mr. William Essery, chemist, Morley Street, Plymouth.

Wright—Glass.—At Upper Dallachy, Fochabers, on August 4, by the Rev. James Gray, F.C., Fochabers, William Wright, chemist, Lockerbie, to Lizzie, fifth daughter of Alex. Glass.

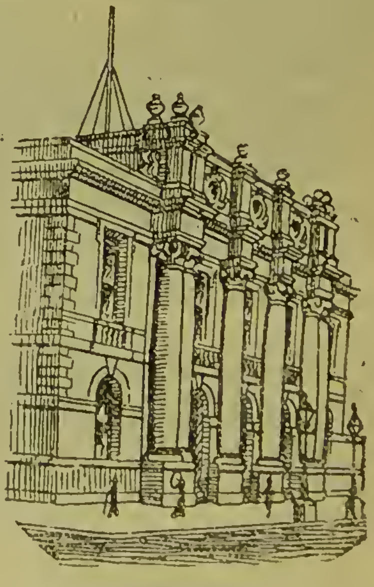
DEATHS.

Dodge.—Mr. Richard J. Dodge, senior partner in the New York wholesale drug and essential-oil house of Dodge & Olcott, died at his residence in Brooklyn on August 2, after an illness of two months. Mr. Dodge was born in January, 1807, in Oak Street, New York, and when a boy entered the drug-house of Bach and Bradish, then on Fulton Street He had not been long in the place when his services were found indispensable; and being thoroughly reliable, even in the smallest details of business, he rapidly advanced in the esteem of his employer. Mr. Dodge learned the drug business by close application to work, and was satisfied to remain from his boyhood days in the firm of which he subsequently became the head. The present firm of Dodge & Olcott was founded in 1798 by Robert Bach, and since then the changes have been as follows :—1801, Robert Bach & Co.; 1821, Bach & Bradish; 1840. Dodge, Cumming & Co.; 1850, Dodge & Colvill; 1859, Dodge, Colvill & Olcott; 1861, Dodge & Olcott. The deceased gentleman became a member of the firm in 1840. Mr. George M. Olcott, son of Charles M. Olcott, who founded the house of McKesson & Robbins, was made a partner in 1856, after being in the employ of Dodge & Colvill for three years. Since 1861 the firm name has remained unchanged. At present the partners are Mr. Francis E. Dodge, son of the deceased gentleman, who has been with the house since 1855, and Mr. Francis H. Sloan, who has a record of twenty-six years, principally in the manufacturing department. Mr. Dodge leaves a widow and four sons. He was one of the founders of the First Presbyterian Church on the Heights in Brooklyn, and for many years had been the oldest elder in the church. He was prominent in musical circles, being considered the most thorough amateur musician in that city. He was also treasurer of the New York Port Society, and regent of the Long Island College Hospital.

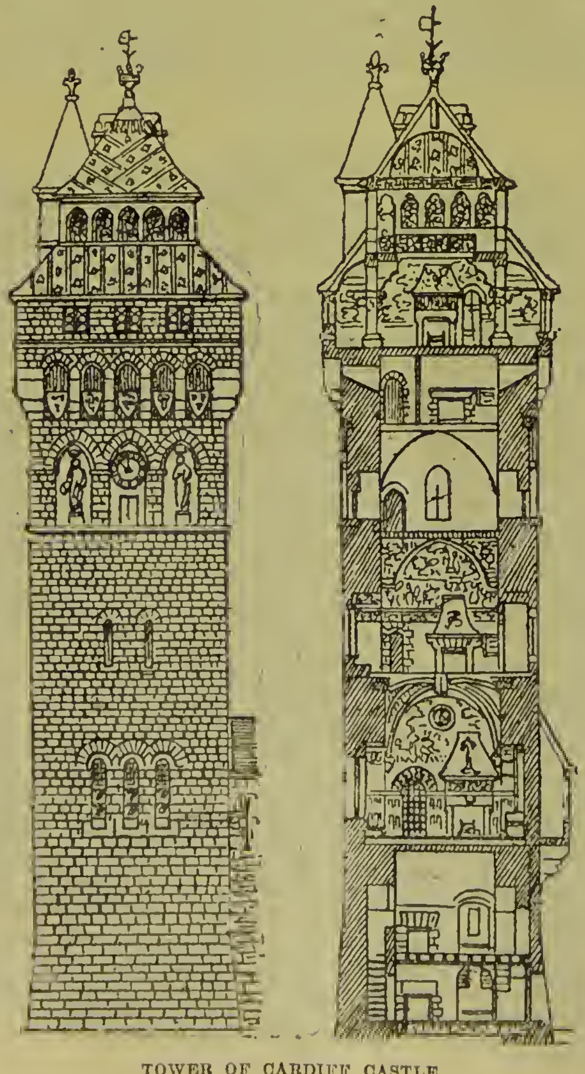
Heyes.—On August 10, Mr. John Heyes, chemist and druggist, 213 Duckworth Street, Darwen. Aged 82. Mr. Heyes had not taken part in politics for some time, but in his youth was one of the Chartist band, and was present at the meeting in Manchester at which Ernest Jones was arrested.

MONDAY, AUGUST 17, 1891.

Cardiff in rain is not seen at its best, and it did rain on Monday afternoon and evening at such a rate as to send the spirits of the local committee far below zero. It looked bad for the Conference. As a matter of fact, Cardiff has not a good reputation amongst Congress-promoters. The people that come here are so interested in the town that the real work of the congresses vanishes below the irreducible minimum. So they say, but it remains to be seen whether the experience of Church congresses holds good for pharmacy. The local representatives seemed to have a glimmering that it would be so, for here are they doleful about the weather. "Everything we have arranged for is out of doors," say they, "and here comes the weather clerk to upset all that we have done." Cardiff is worthy of its peculiarity in congress-gathering. It is the mushroom city of the West: a phenomenal town in every respect. When this century began it had not got far past the thousand in population, and just fifty years ago it touched the five figures. These thirty years past it has grown at such a pace as to



TOWN HALL, CARDIFF.



TOWER OF CARDIFF CASTLE.

double itself every four years, and now it has over 130,000 inhabitants.

It is a libel to call the town smoke-begrimed, as our leading daily has done. One may see a little coal-dust about the docks, and a corner here and there which might be purified; but it is nearly all new, and everything is trim, clean, and modern. St. Mary's Street is the principal business street of the town: not a very handsome street, as our illustration shows, but that is because the old and the new are blended together a little too roughly. Time will give it polish. Towards Canton, Cathays, and Roath we have new districts, where there are streets of fine villas which will compare favourably with similar roads in more fashionable towns. In going Canton-way (strange to find a Chinese name in this quarter!) we pass Cardiff Castle, the residence of the Marquis of Bute. It was the marquis's father who made Cardiff, for he it was who sank all his fortune in making the docks which have made the town. He died penniless, it is said, but he left his son a rich inheritance. All the land round the castle is now given up to villadom. This is Canton. The land has been parcelled out carefully and well, and streets have been built so quickly that the average Cardiffian cannot keep pace with his map. They are well-built villas, too—mostly stone—and it is a pleasant outlook that Lord Bute has from his castle windows. The clock-tower of the castle is one of the leading features of the headpiece to our report, as it is a landmark in Cardiff. The castle has a history stretching back to the time when England and Wales were a Roman colony; but as it stands now, in its restored and enlarged state, it is the work of its owner, who was aided by the late Mr. Burges, R.A., in carrying out his designs. The tower is entirely new, and is quite apart from the castle itself, although connected with it by the old curtain wall, now restored and covered. The Marquis did a good thing when he put the kitchen on the top of the tower, for, although its odours may descend just as readily as such odours ascend, they must be powerful indeed to travel into the castle. The apartments of the castle are arrayed in all the magnificence that only a great landowner can command, and include a private chapel and great staircase, which are types of the highest architectural and artistic embellishment. At present the town is a set-off to the magnificence of the castle, for, although there are a few imposing public buildings, it is too young a place to boast of much architectural display. Even the University College authorities have not had time to erect a house for themselves, for the buildings in which the Conference meets this week are the old Glamorganshire and Monmouthshire Infirmary, which the authorities rent at 400*l.* a year. The institution, as it is, is a compromise; the result of a battle with North Wales for a grant of 4,000*l.* a year, which it ultimately secured on a "no theology" basis. The college was opened scarcely eight years ago, but has already nearly nine hundred pupils attending the day and evening classes. The class-rooms are fairly good, but the town cannot remain content with such shelter as this for its higher education.

THE CONVERSAZIONE.

The Town Hall, in which the reception was held, was erected in 1849. It is a building with rather a handsome exterior, four Ionic capitals relieving the otherwise characterless style of the two-storied front. The vestibule was on the present occasion used as a cloak-room, but commonly serves for a corn exchange. A handsome staircase leads to the assembly-room, a spacious apartment lighted by two cut-crystal candelabra. At one side of the hall this evening there was a platform temporarily erected for the musicians, and the hall itself was gaily decorated with trophies of shields and flags. Here Mr. and Mrs. Martindale, supported by the Mayor and the Marchioness of Bute, received the members from 8 o'clock to 8.30.

ST. MARY'S STREET, CARDIFF.

Amongst those who came to the reception from distant parts were Messrs. S. R. Atkins, W. D. Savage, John Moss, S. M. Burroughs, H. S. Wellcome, Peter Boa, J. Hodgkin, A. W. Gerrard, A. E. Tanner, G. S. Taylor, Gwilym Evans, J. P. Kay (Aberdeen), P. C. Maitland, T. Howell Williams, A. H. Mason, R. H. Davies, A. Southall, and others who take a more or less active part in the Conference.

Conversation was very general until half-past eight, when the first part of a programme of music was commenced. This was under the directorship of Mr. Jacob Davies, the accompanist being Madame Clara Davies. The programme was as follows:—

PART I.—FROM 8.30 TO 9 O'CLOCK.

WELSH AIR .. .. "The Ash Grove" .. .. .. *Owain Alaw*
PARTY.

SONG .. .. "The Toreador" (Carmen) .. .. .. *Bizet*
Mr. A. H. PERKINS.

TRIO .. .. "The Hawthorn in the Glade" .. *Sterndale Bennett*
Miss MATTY DAVIES, Mr. D. W. LEWIS, and Mr. HERBERT.

SONG .. .. .. "When Other Lips" .. .. .. *Balfe*
Mr. R. W. EVANS.

HARP SOLO .. "Fantasia on Welsh Airs" .. .. .. ——
Miss GEORGE.

PART SONG .. .. "Fair Land, we greet Thee" .. *Ciro Pinsuti*
PARTY.

PAET II.—FROM 9.30 TO 10 O'CLOCK.

WELSH AIR .. .. "Y Gwenith Gwyn" .. arr. *J. Thomas*
PARTY.

SONG .. .. .. "Rose Marie" .. .. *Molloy*
Mr. LOUIS GILES.

DUET .. .. "In the dusk of the twilight" .. .. .. *Parker*
Misses MAGGIE and ANNIE DAVIES.

HARP SOLO .. .. "Autumn" .. .. .. *J. Thomas*
Miss GEORGE.

SONG .. .. "The Bird that came in Spring" .. *Benedict*
Mrs. DAVIES-EVANS.

PART SONG .. .. "Good Night, Beloved" .. .. *Ciro Pinsuti*
PARTY.

"GOD SAVE THE QUEEN."

The concert was delightful, and was largely seasoned with the national spirit. Light refreshments were served in an ante-room. The attendance was good, considering the extremely inclement nature of the weather.

An exhibit of microscopic objects and others of scientific interest was one of the programme attractions; but, as far as our reporter could gather, this shrank to a few tablefuls of old muskets and other antique curiosities; but there was a good exhibit of photographic views of local sights, shown by Mr. Freake. Conversation and hand-shaking were so brisk, however, that the exhibition was not missed.

The company was received by Mr. and Mrs. Martindale, on whose right were the Right Hon. the Marquis of Bute, Mayor of Cardiff (in his robes of office), and the Marchioness of Bute, supported by Mr. John Munday, chairman of the local committee.

LLANDAFF CATHEDRAL.

Wales was a Christian nation for centuries while England was Pagan. There were probably Christians residing in Llandaff at the end of the first century, and Dubritius founded the See about the year 177. It is the oldest See in Britain. The cathedral is the survival of many restorations. Apart from the ruins, the building at present has bits of architecture about it representing nearly all the centuries since the eleventh; and of recent years it has been entirely restored, so as to make it, as it is now, a fitting sanctuary. The Cathedral is one of the sights of Cardiff, and was visited by many Conferees during the week.

THE MARQUIS OF BUTE.

The Most Honourable John Patrick Crichton Stuart, K.T., LL.D., Marquis of Bute, Earl of Windsor, Viscount Montjoy, Baron Mount Stuart, and Baron Cardiff, the present Mayor of Cardiff, is the third marquis of this title, and was born in the Isle of Bute in 1847. His great-grandfather, the first marquis, the famous but unpopular favourite of George III., was an enthusiastic botanist, and spent vast sums on the pursuit of his hobby after his retirement from public life. The present marquis succeeded to the title in 1848, and on attaining his majority in 1868 joined the Roman Catholic Church. He was generally regarded as the original of Lord Beaconsfield's novel of Lothair. He has published a lecture on "The Early Days of William Wallace," and a sketch entitled "The Burning of the Barns of Ayr"; a translation of the Roman Breviary and other Catholic works from the Latin. The Marchioness of Bute was a daughter of Lord Howard of Glossop.

Our portrait of the Marquis is from a photograph by Mr. Freke, Cardiff.

British Pharmaceutical Conference.

TWENTY-EIGHTH ANNUAL MEETING.

CARDIFF, AUGUST 18 AND 19, 1891.

Mr. WILLIAM MARTINDALE, F.C.S., President.

TUESDAY.

> In the meantime the way is to be prepared by the visit of the Pharmaceutical Society. Perhaps the chemists will impart to us the method of making pills, or at least let us know the most effective. I never go out on a Bank holiday without noticing that the quack doctors do a large trade. The masses buy the small spheres with an avidity which should destroy all mirth. But in reality it has a contrary effect. Like the man who takes out his mackintosh, and is delighted when it rains, so the dyspeptic does not further trouble himself about his ailments, knowing that should the worst be realised he has the antidote in his pocket. It is quite according to Cocker that the Pharmaceutical Society should eat, drink, and be merry. In the interests of their trade they should encourage this sort of affair. Unfortunately the smart people do not purchase their pills before their pleasure. In this respect the masses are wiser than they are. The latter enter into the fun of the fair without being troubled by the skeleton in the cupboard. The former, while trying to be joyful, are for ever curtailing the brightness of the day to appease the fiend which looms in the distance. But Cardiff is a young community, and has not risen from the ranks sufficiently long to be permeated with society's failings. It has invited the Pharmaceutical Society to come before the festivities. This body will teach us not what to avoid, but furnish us with a remedy after indulgence. Only ascetics can extract pleasure out of self-denial, and we are too cheerful here to abstain from drinking enjoyment to its dregs, fearful of the morrow. Thus we welcome these dispensers of drugs, and will acknowledge that without their nostrums life would be very monotonous. Possibly, though, when we make a wry face over their doses, we may be apt to quote the poet—
>
> Glad glories glint grey in the gloaming,
> A pill is our portionless plum,
> We reach for a rest to our roaming
> That never will come.

It was in this way that a Cardiff morning paper introduced the Conference to the town. The blunder regarding the two institutions is so usual at this season as to amount almost to a virtue. Mr. Martindale made things all right next morning in a neat little letter. The night had wrought a great change on the weather, which was delightfully bright and warm. At a few minutes past ten Mr. Martindale entered the chemical lecture theatre of the University College. He was accompanied by the Most Hon. the Marquis of Bute, K.T., in his mayoral robes and chain, who was supported by Mr. J. L. Wheatley, town clerk, also robed. To the left of the President were Professor Viriamu Jones, Emeritus-Professor Redwood, Mr. G. F. Schacht, Mr. John Munday, and Mr. A. Coleman. Mr. S. R. Atkins and Mr. R. H. Davies were to the right of the mayor. The audience at this time numbered eighty-five, and the proceedings to begin with were somewhat slow and dull. It is a new thing in Conference experience to have a live lord patronising the proceedings, consequently there was a little want of harmony as to the way in which the mayor should be received. All on the platform stood with him, and part of the audience also rose to their feet; but all were equally hearty in their applause, and with, "Pray silence for the mayor," from the President, the proceedings commenced.

The Marquis of Bute is a strikingly handsome man, beside whom the tall figure of the President was slightly dwarfed. Although his hair and beard are silver sprinkled, he is a man in the prime of life, with a pleasant face, and cheerful, if somewhat faltering, voice.

The MARQUIS, on rising, was received with loud applause. He said: It is my pleasing duty to bid an official welcome to the British Pharmaceutical Association. In view of the series of interesting items of business which is immediately to begin, you will not, I am sure, be obliged to me if I wasted your time by making a speech. At the same time, I hope that the cordiality of the feelings of the inhabitants of Cardiff towards such an association is too evident to need any words of mine to emphasise it. I will, therefore, with your permission, say nothing more, except to express the hope, in the name of all the people of Cardiff, that the visit of this Association may be as agreeable to its members as we feel sure that it will be profitable, and, in the name of the town, to bid you a most hearty welcome. (Applause.)

The PRESIDENT: My Lord, Mr. Mayor, I am glad to know, sir, that you have given us such a kind and hearty welcome to this important town. It is one, I understand, in which you take great interest, and that you bestow so much of your time, talents, and energy on this great centre that has increased so largely within the last twenty years. The important question of education has been brought prominently to the front in this district of late, and our meeting, in this building of the University College of South Wales, I trust, will foreshadow great help to the cause of education in this important district, and with the higher interests of those more especially connected with it. We are much obliged to you, my lord, and thank you for the kind welcome you have given us. (Applause.)

DELEGATES.

Mr. NAYLOR then read a list of delegates, which was exceptionally short. It was as follows:—

Pharmaceutical Society of Great Britain.—Messrs. M. Carteighe (President), A. Bottle (Vice-President), Abraham, Atkins, Cross, Evans, Hills, Leigh, Southall, and Schacht.

North British Branch.—Messrs. Peter Boa and D. B. Dott.

Pharmaceutical Society of Ireland.—The Vice-President Mr. W. F. Wells, jun., Dublin, and Messrs. G. D. Beggs and J. C. C. Payne.

Liverpool Chemists' Association.—Messrs. Abraham, Bain, Conroy, Ward, and Wellings.

Brighton Chemists' Association.—Messrs. W. D. Savage and Marshall Leigh.

Brighton Junior Association of Pharmacy.—Mr. Kilby Pears.

North of England Association.—The President, Vice-President, Secretary, and Treasurer.

Aberdeen and North of Scotland.—Mr. James Paterson.

Mr. Naylor also stated that letters of apology for inability to attend the Conference had been received from Mr. T. B. Groves; Professor Bentley, Mr. Hayes, Dublin; Mr. W. K. Hopkin, London; Mr. W. Kirkby, Manchester; Mr. J. B. Stephenson, Edinburgh; Mr. R. Wright, Buxton; Dr. Thresh, Chelmsford; Mr. Ward, Sheffield; Mr. Cross, Shrewsbury. Mr. Reynolds, of Leeds, wrote referring to the phenomenal growth and material prosperity of Cardiff, and said it was pleasant to find that the interests of their own art—pharmacy—should meet that consideration there which the older of the larger towns had bestowed upon it. The Secretary further stated that he had received a typical letter from Mr. Benger, who expressed his disappointment at not being able to take part in the Conference this year.

REPORT OF THE EXECUTIVE COMMITTEE.

Mr. **NAYLOR** then presented the report of the executive, which stated that the report of the Unofficial Formulary Committee had been revised and recently issued. In the revision advantage was taken of the opportunity to make such alterations as circumstances had rendered necessary. With the sanction of the executive a number of formulæ had been added to the list, while others had been eliminated owing to their adoption by the General Medical Council. The committee regarded their admission into the Additions of the B.P. as an indication of the usefulness of the formulæ, and as a recognition of the work done by the Formulary Committee. The resignation, in December last, of Mr. J. C. Nightingale, the assistant-secretary, after a service of three-and-a-half years, was received with regret, and the Committee placed on record an expression of the usefulness with which he had discharged the duties of his office. Mr. M. K. Johnson, A.P.S., was unanimously chosen and duly appointed to fill the vacancy. On behalf of the Conference the executive had presented a congratulatory address to the Pharmaceutical Society of Great Britain, on the occasion of its jubilee in May last. Members were invited to suggest subjects which required investigations with a view to their inclusion in next year's list. The Conference had suffered irreparable loss through the death of Dr. H. B. Brady, of Newcastle, at Bournemouth in January last. Dr. Brady was one of the founders of the Conference, and it was owing to his conspicuous ability and untiring zeal in the highest interests of pharmacy that the success of the association was largely due. He had occupied the President's chair for two years—at Brighton in 1872, and at Bradford in 1873—and, although during the last few years he was unable to take an active share in their proceedings, his interest in the welfare of the Conference continued undiminished. The many honours bestowed on Dr. Brady at home and abroad indicated the high regard with which he was held in the scientific world.

It was a subject for regret that the efforts made to increase the membership of the Conference had not been successful, and no applications for assistance in researches had been received during the past year. The committee again reminded the Conference that funds were available for that purpose. A grant was made last year to Messrs. R. A. Cripps and A. Whitby, and their report on ipecacuanha would be presented at the present meeting.

In December last Mr. Louis Siebold was re-appointed editor of the Year-Book.

TREASURER'S REPORT.

Mr. R. H. **DAVIES** submitted the financial statement for the past year, which was as follows:—

FINANCIAL STATEMENT

for the year ending June 30, 1891. The Honorary Treasurer's account:—

RECEIPTS.

		£ s. d.	£ s. d.
1890.			
July 1.	To Assets forward from last year—		
,,	,, Balance in hand at bank	—	83 0 8
,,	,, Cash in secretary's hands	—	3 17 10
,,	,, Messrs. Churchill's account	—	107 3 0
1891.			
June 30	,, Sale of Year-Book by publishers ..	—	24 6 8
,,	,, Advertisements—1890 volume	107 10 4	
,,	,, ,, 1839 ,, ..	3 10 6	
			111 0 10
,,	,, Members' subscriptions— Amount received from July 1, 1890, to June 30, 1891	–	476 12 3
,,	,, Index Book— Sale by secretary	—	0 5 0
,,	,, Liabilities on outstanding account— Messrs. McCorquodale & Co.	—	3 4 6
,,	,, Unofficial Formulary— Sale by publishers	—	6 7 1½
			£815 17 10½

EXPENDITURE.

		£ s. d.	£ s. d.
1891.			
June 30.	By expenses connected with Year-Book—		
	Binding, printing, publishing, &c. ..	293 13 8	
	Postages and distributing	35 11 0	
	Advertising and publishers' charges ..	30 0 2	
	Editor's salary	150 0 0	
	Foreign journals for editor	5 15 6	
			515 0 4
,,	,, Unofficial Formulary—		
	Advertising	0 18 6	
	Publisher's commission	0 12 8½	
			1 11 2½
,,	,, Sundry expenses—		
	Newcastle portrait group	4 13 3	
	Authors' copies of papers	0 10 2	
	Expenses of assistant-secretary at Leeds	10 0 0	
	Illuminated address to Pharmaceutical Society	1 10 0	
			16 13 5
,,	,, Assistant-secretary's salary from July 1, 1890, to June 30, 1891	45 0 0	
,,	,, Rent of office	10 0 0	
			55 0 0
,,	,, Blue Lists—		
	Printing	3 4 6	
	Postages	2 19 7	
			6 4 1
,,	,, Postages	—	10 19 3
,,	,, Printing and stationery	—	19 17 0
,,	,, Bank charges as per bank-book	—	0 4 7
,,	,, Petty cash	—	4 7 4
,,	,, Liabilities of last year, since paid ..	—	0 8 6
,,	,, Outstanding assets— Messrs. Churchill's account	—	110 3 3
,,	,, Balance at bank	74 4 9	
,,	,, In secretary's hands— Postages .. .. 23/3 Petty cash 0/11	1 4 2	
			75 8 11
			£815 17 10½

THE BELL AND HILLS FUND.

		£ s. d.	£ s. d.
1890			
July 1.	To balance in hand	17 4 6	
	,, one year's dividend on 360*l.* consols ..	9 13 4	
			26 17 10
1890.			
October 11.	By purchase of books for Leeds ..	—	10 5 2
			16 12 8
	Assets—		
	Cash balance at bank	—	16 12 8
	Consols	—	360 0 0

Audited and found correct { E. YEWDALL, Leeds.
{ D. ANTHONY, Cardiff.

Mr. D. **ANTHONY** (Cardiff), one of the auditors, stated that he had found the accounts well kept. The reports were adopted on the motion of Mr. Munday, seconded by Dr. Redwood. The way was now clear for the President. The lecture theatre by this time was comfortably filled, several ladies being present. A hearty round of applause signalled Mr. Martindale's rising to deliver

THE PRESIDENT'S ADDRESS.

LADIES AND GENTLEMEN,—For a second time in the history of the Conference, we are met in South Wales, in this land of mountains, bards, and song, with its historical reminiscences dwelling in the hearts of its people, who cling to their ancient language and customs, with a spirit shown by their annual national festival, or Eisteddfod, held simultaneously with this meeting.

Our former session in Wales was at Swansea, in 1880, under the presidency of my late friend, Mr. William Southall, and in the decade that has elapsed, since then, the great centre of industry in which we are now gathered has so largely developed in wealth and importance that the percentage of its increase in population is double that of any of the other large towns in the kingdom. This shows the great progress that has been made in arts and manufactures by the energy of the Welsh people, aided by the geographical position and mineral wealth of this important district, and the extraordinary facilities that exist for the distribution of its products by sea and land.

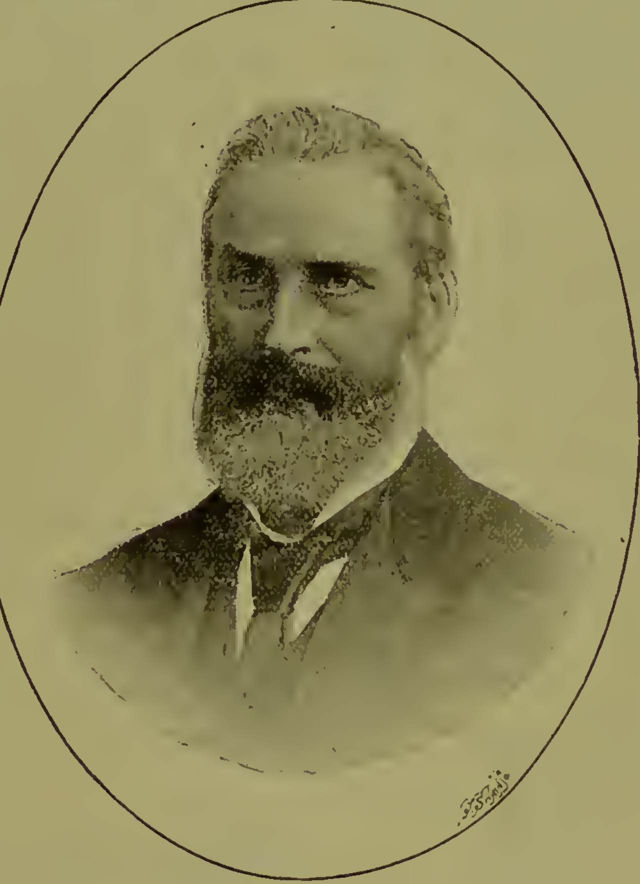
It is with great diffidence that I venture to address you, and I feel my incapacity the more in having to follow the many honoured pharmacists who have preceded me in this office, particularly Mr. Umney, who, in his practical addresses at Newcastle and Leeds, dealt in a masterly manner with subjects appertaining to pharmacy from his point of view as a wholesale chemist and manufacturer of pharmaceutical preparations.

HOW THE PHARMACIST IS REGARDED.

May I be allowed, in the first place, to refer to the pharmacist in his relations to the public. As in politics the press is considered the fourth estate of the realm, and, perhaps, the most powerful, so pharmacy is sometimes regarded as the fourth estate of medicine. It is true that pharmacy is in a position different from that of the press in politics; yet, on account of the assiduous care and attention we have to bestow on our calling, it might be justly claimed that it is far from being the least important section of medicine, especially when we regard the direct bearing it has on the patient. This position is, however, I fear, not always accorded, and we run a risk of having to give place to the nurse, whose calling is now almost assuming the pretensions of a profession.

Who, when passing through the dark valley, has not expressed gratitude to his medical or spiritual adviser, and given thanks for the mother's care, or the fair soft hand of wife, sister, daughter, or even trained nurse, that has smoothed his pillow? But we, as pharmacists, are not brought into such close contact with the patients, as we rarely, if ever, see them while suffering acutely, and, notwithstanding our engrossing occupation and poor remuneration, the meed of gratitude we obtain is often the thankless one of having supplied nasty physic.

I will not dwell on the hard times of which we often complain. These are not changed. Shakespeare's apothecary was poor, and although, "being holiday, the beggar's shop" was shut, the *genius loci* was in the interior, as will generally be found on public holidays at the present day.



MR. WILLIAM MARTINDALE, F.C.S.,

President of the British Pharmaceutical Conference.

(From a photograph by Barraud, Oxford Street.)

In our relations with the medical profession I think we meet with more appreciation. In the compilation of the "Additions to the British Pharmacopœia," recently published, the General Medical Council accorded us an acknowledged position, which, in any future revision of our national Pharmacopœia, will, I trust, be continued and even extended.

THERAPEUTICAL PROGRESS.

The tendency of the medical mind is to be conservative as to the use of new drugs, and to know those that are used and their properties well. But opposed to this conservatism is the element of progress in physiological and therapeutical investigation, the search after truth, and the desire for the relief and cure of human and animal suffering arising from disease and pain. There can be no finality to these investigations. As the corporeal substance as well as the mental characters of individuals differ, so do the marked characteristics of well-defined diseases vary. Not only so, but in nature drugs themselves vary, and, so much has this been a reproach to our craft, that the tendency of pharmacy of late has been to prepare medicines in as definite and stable a form as possible, and to provide chemical substances whose purity can be tested, where definite medicinal action is required. But, as I have said, the characters of a disease also vary in individuals, and the physician is, therefore, often compelled to treat the patient's symptoms, rather than the disease as a whole.

According to Dr. Lauder Brunton,[*] pharmacology may be said to have passed through four transition periods in the treatment of disease. "In the first stage, crude drugs were employed, prepared in the roughest manner, such as powdered cinchona or metallic antimony. In the next stage these were converted into more active and more manageable forms, such as extracts or solutions, watery or alcoholic. In the third stage, the pure active principles, separated from the crude drugs, were employed—for example, morphine and quinine In the fourth stage, instead of attempting to extract our medicines from the natural products in which they are contained, we seek to make for ourselves such substances as shall possess the particular action we desire. Now, just as we find stone and iron implements occasionally used together in the same country, so we find that drugs belonging to the different stages mentioned are used at the same time. For example, we may find crude powders, alcoholic extracts, and pure alkaloids, all contained in the same pill. Nay, more, we may sometimes give to the patient, in addition to all these, a medicine made artificially. But while this condition still exists, we notice that crude drugs are being less and less used, and their place is gradually being taken by pure active principles. We may say, then, that we are passing at present from the stone age into the bronze age of pharmacology, and may, indeed, be said to be just entering on the iron age." The last may be called the rational or scientific, as distinct from the empirical, treatment of disease.

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[*] *Brit. Med. Journ.* 1883, vol. ii. page 329.

Hitherto, the knowledge which we possess of the action of drugs is principally inherited, and most of it has, until recently, been obtained empirically. The search for new remedies was conducted on the basis of their attested reputation. The medicinal properties of opium, cinchona, digitalis, ergot, and coca have been accepted as facts from their empirical history. It is true, modern chemistry has, in many cases, isolated definite active principles to which the medicinal properties of these and other drugs are more or less due, yet in this direction much is still left undone. These principles, having to some extent the same properties as the crude drugs from which they have been prepared, have generally been accepted medically as possessing the same therapeutic action. For example, it had long been known that the galenical preparations of coca exercised a soothing influence when applied to irritated conditions of the larynx. Niemann, the discoverer of cocaine, in 1860, Schroff in 1862, and von Anrep in 1880 seem to have obtained an inkling of the local anæsthetic action of cocaine. Yet it was left for Koller, after reasoning from the premiss that a substance which paralyses the terminal sensory nerves of the mucous membrane of the tongue would probably act similarly on those of the cornea and conjunctiva, to demonstrate by experiment with an aqueous solution of the hydrochlorate of cocaine on the eyes of guinea-pigs, rabbits, and dogs, that this alkaloid as a local anæsthetic would be a most valuable addition to the materia medica.

CHEMISTRY AND PHYSIOLOGY.

The advances made in chemical sciences during the present century, and the experimental investigations of recent physiologists and therapeutists, tend to prove that the physiological action on the animal system of the simpler chemical compounds, in many cases, is a chemical and physical action of the elements of which they are composed, modified to some extent by what constitutes life, and that the elements themselves act somewhat in accordance with what might be expected from their chemical alliances and the positions they occupy in regard to the periodic law of Mendelejeff. For example, the action of iron and manganese, of arsenic and phosphorus, and of the allied metals of the alkaline earths—calcium, strontium, and barium—present striking instances of resemblance in this respect, which are modified by their chemical affinities. Such an action is the strong chemical affinity exercised by oxalic acid for calcium, and its power of withdrawing that element from the circulatory system, as shown by Dr. Ringer.* Calcium being essential to circulation in the animal system, oxalic acid is thus rendered a powerful poison.

Following such investigations, the therapeutist and the pharmacist come between the physiologist on the one hand, and the chemist and botanist on the other. The former naturally watch the work of the latter with interest. The vegetable kingdom has yielded the principal supply of medicines, which have come into use empirically; but, on the other hand, it is to the experimental work of the chemist and physiologist we owe the great advances in inductive therapeutics and pharmacy upon which, latterly, attempts have been made to found the system of rational therapeutics to which I have referred. I have mentioned that the simpler chemical compounds act in accordance with their alliances. In the more complex organic substances there is also a marked connection between physiological action and chemical constitution. The physiological action of a certain compound having been ascertained by experiment, chemists have endeavoured to produce substitution derivatives, by replacing certain of its elements or groups by others, thus altering the molecule of the original substance in such a manner as to modify its action at the will of the physiologist or to satisfy the requirements of the physician. Knowing what the effect of an alteration has been in one substance, they are able to anticipate the results that will be obtained by a similar alteration in other cases, and by inferences drawn from the physiological action of these compounds, to place therapeutics on a scientific basis, being, as Dr. Richardson predicted,† "able to manufacture, in our laboratories, drugs which would produce in the animal body any effect that we might desire, without our having to obtain them, as one might say, haphazard, from various plants or other sources."

Generally the chemist has been in advance of the physiologist, but the latter at times, by a process of induction, has indicated the direction in which he desires the chemist to work. The chemist, it is true, in attempting to formulate the constitution of the alkaloids, has been meeting the physiologist by working along the line of his own investigations, and clearing up the relationship which several of these bodies have one to another. Thus codeine has been shown to be mono-methyl-morphine, whilst caffeine and theobromine are respectively tri- and di- methyl-xanthine, and the connection between these and guanine and urea has been demonstrated, also the relation of cocaine to atropine, as well as that of pyridine to piperidine.

Some of the first experiments in this direction were conducted by Drs. Crum Brown and Fraser, the former now President of the Chemical Society, who worked with salts of ethyl and methyl addition products of strychnine and atropine, and obtained results showing that these bodies, although apparently changed little in chemical structure and properties from the original alkaloids, possess physiological actions differing from those of the mother substances in a very marked degree. But the ignorance of chemists with respect to the chemical constitution of alkaloids minimises at present the value of the results of biological experiments peformed with a view of ascertaining the relation between substituting groups and physiological action. The relation of the modified compound to the mother alkaloid may not be understood, and it may be a subject of doubt whether the introduction of an alkyl group into a molecule may result in a simple substitution or be accompanied by a radical change in the molecular structure. For example, the results obtained by Brown and Fraser led them to the conclusion that the addition of a methyl or ethyl group to strychnine, as in the iodide of methyl-strychnium, changes it from a poison which tetanises the spinal cord into one which paralyses the motor nerves. Stahlschmidt, however, had previously arrived at a different conclusion as to the effect of the introduction of the alkyl group, and this apparent conflict in results is expressly mentioned by Brown and Fraser as giving rise to their investigation. But recent investigation has shown that the methyl strychnine used by Stahlschmidt, which he prepared from iodide of methyl-strychnium, was not a simple substitution product, but an isomeric compound that readily reverts to methyl-strychnium salts under the influence of acids. But in alkaline solution it appears to be more stable, and it has now been found that when methyl-strychnium is subcutaneously injected it produces all the symptoms characteristic of strychnine-poisoning.

SYNTHETIC REMEDIES.

Up to the present, co-operation between the physiologist and chemist has been most successful when the chemist has started with a body the molecular construction of which was sufficiently well understood. Thus the therapeutic deficiencies of quinoline, which constitutes the nucleus of many natural alkaloids, led to experiments as to the influence on its therapeutic action of certain modifications. By the introduction of a methyl or ethyl group into tetrahydroquinoline, the tertiary bases known as methyl and ethylkairolin were produced. The employment of an oxyquinoline in place of quinoline was found to yield several more valuable antipyretics, since from ortho-oxyquinoline the methyl and ethyl kairins were prepared, and some time afterwards from para-oxyquinoline were obtained the methyl and ethyl thallins, which are still used to some extent, although the kairolins and kairins have practically been superseded. The connection with antipyrin is not far to seek, for, whereas the oxyquinoline derivatives may be prepared by the action of aceto-acetic ether on amidophenol, the pyrazolon derivatives, of which antipyrin is the best known, result from the reaction of aceto-acetic ether with phenyl-hydrazine.

In fact, it is in the rich field of chemical research, opened up originally in the investigation of the constituents of coal tar, which has given such an impetus to the synthesis of organic compounds, that pharmacology has been following chemistry, and sometimes, as I have said, indicating the way in which the more exact science should proceed. It is about thirty-five years ago since Dr. Hoffmann induced Dr. Perkin to undertake a research with a view to building up quinine artificially from derivatives of coal tar. This investigation was unsuccessful, though it resulted in the discovery of mauve, and soon led to the preparation of the various brilliant colours which have dazzled our eyes during the latter part of this century. But although quinine has not yet been prepared synthetically, other organic substances, as has already been shown, have been synthesised, which have tended to displace that valuable alkaloid from the pinnacle on which it stood twenty years ago. The commercial value of the medicinal substances produced in this way is, indeed, still small compared with that of the dye-products; yet even the former are of such importance that one which I have already mentioned—antipyrin—is in great demand at a price more than three times that of quinine, which it has to a considerable extent displaced, and this notwithstanding also that a much larger dose of it is required. Time would fail me to review all the synthetical products that have been introduced into medical use during the last few years, and as this was so well done by Mr. Hodgkin at our last meeting at Leeds, it is the less necessary now.

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* *Pract.* xxxiv. page 81

† "Brit. Assoc. Reports," 1868, p. 186.

The most important of the new remedies obtained from this source may be placed in classes, as:—Antipyretics, which lessen temperature; analgesics, which relieve pain; hypnotics, which produce sleep; the nitrites, or arterial dilators; antiseptics, or germ-killers; and anæsthetics, which produce unconsciousness or nervous insensibility, and suspend the mental perception of pain. Most of them belong to more than one class, but generally one or other action predominates, and determines the class to which, as Dr. Lauder Brunton says, it may be assigned. These remedies have not been taken haphazard from the innumerable substances known to the chemist, but having been selected from certain groups, the members of which have been ascertained to possess the desired action in varying degrees. Dr. Brunton hopes that we may ere long have a series of remedies having an action upon the heart and vessels like digitalis, strophanthus, sparteine, or erythrophlœum, but possessing an advantage over these drugs in one most important point—viz., in their chemical structure being known to us. It will then be possible to modify them in the laboratory in one way or another until the product is secured which will have the particular effect desired in any given case.

PROGNOSTICATIONS NOT ALWAYS FULFILLED.

The prognostications as to the effect of these compounds on disease have not, however, always been fulfilled. For example, the use of tetronal in place of sulphonal as a hypnotic has not proved as satisfactory as was anticipated by Baumann and Kast. On the other hand, no reasoning based upon existing knowledge of physiology could have demonstrated that the abstraction of the elements of water from the morphine molecule would convert hydrochlorate of morphine, which is a powerful sedative and hypnotic, into the hydrochlorate of apomorphine, which produces such prompt emesis. For practical purposes, therefore, the physician is obliged to fall back on the accumulated experience of others for much of his therapeutic treatment.

Having spoken of the scientific and empirical treatments of disease, I pass over other forms of treatment which have attracted more or less attention at times, but do not concern pharmacists, such as hydropathy, galvanism, massage, metallotherapy, faith-curing, and hypnotism, or mesmerism, which has more especially been investigated during the last year. But I may, in passing, refer to the medical use of various lymphs, the preparation of which may one day form part of the occupation of the pharmacist. Inoculation with small-pox virus, I am happy to say, is now obsolete, but the beneficent use of vaccine-lymph against small-pox, and of Pasteur's cultures for hydrophobia, led Professor Koch to endeavour to destroy the tubercle bacillus with an analogous substance. He attempts this by hypodermic injections, but his fluid, now called "tuberculin"—the exact process of its production has not been published—does not correspond to vaccine-lymph. It is stated to be a glycerine extract of pure cultivations of tubercle bacilli. The cultivations are pure in the sense that they are not mixed, as by repeated operations all other microbes are removed from the cultivating medium. The glycerine solution, which, according to Koch, contains only a fraction of one per cent. of the active principle, is a powerful poison to tuberculous tissue. Recent researches tend, however, to show that the characteristic action of tuberculin is referable to at least three of its constitutents, and that the remedial portion, which appears to consist of albumoses, can be separated from the constituents that cause fever and inflammation. According to Koch, it is not a direct germicide to the bacillus, but acts by destroying the tissue in which the bacillus is located. Tuberculin would appear to bear the same relation to the tubercle bacillus that alcohol does to the yeast-plant, though it is of quite a different chemical nature. We all remember the great sensation it produced about nine months ago. I am sorry it has not proved so successful as was anticipated. Yet, if its preparation be modified, and, as I have mentioned, certain principles be removed from it, favourable opinions are still held of its ultimate success, and, I am informed, that of the tuberculous diseases phthisis will probably prove the most amenable to its treatment.

Competitors in this line of treatment have not been wanting, amongst these the use by Liebreich of cantharidate of potassium has been most extolled as a cure for phthisis, but the reports on the use of this also have not been favourable. Other agents destructive of the tubercle bacillus have been suggested for therapeutic use, such as would act on the lung-tissue by means of the circulatory system—for example, helenin, or alant-camphor, and phenyl-acetic and phenyl-propionic acids. These substances have been found to exert a germicidal effect on the tubercle bacillus under various conditions. In Paris sulphuretted hydrogen, diluted with carbonic acid, administered in the form of enemata, the inhalation of an atmosphere charged with creosote and eucalyptol under pressure, and a 16-per-cent. solution of chloride of zinc injected deeply into the parts surrounding the tuberculous tissue, have also been used with a similar object, as likewise have injections of the serum of the blood of goats and of dogs, the goat being quite, and the dog to a great extent, immune from attacks of tuberculosis.

GALENICAL MEDICINES.

But notwithstanding the importance and value of these new weapons for the combating of disease, physicians will probably long continue to use the natural forms of medicine of the third or second groups referred to by Dr. Brunton—that is, the pure active principles or extracts or solutions, and the pharmacist will still be in his element in preparing these.

Such medicines have hitherto, as I have said, been principally obtained from the vegetable kingdom—in fact, the empirical search for medicines has probably done more to encourage and stimulate the study of botany than the search for food, or other economic considerations; and a knowledge of this science is absolutely necessary to enable us to supply the various parts of plants used medicinally free from admixture with others. We are bound to use all diligence to supply them in this condition, as well as to exercise our art in preparing them in a suitable and stable condition for administration. Whether medicines be introduced empirically or rationally, pharmaceutical enterprise should not be behind-hand, either in commercial supply, in the preparation of galenical compounds, or in the isolation of the active principles of the drugs.

In order to make our galenical preparations more definite, many of them containing recognised active principles have in recent years been officially directed to be standardised. The interesting communications of Messrs. Farr and Wright, read at our last meeting, and others by the same authors, which have been published since, have shown the necessity of the further use of this mode of obtaining pharmaceutical uniformity, although it may be overdone. The medicinal properties of many of our drugs do not depend on one alkaloid or active principle, but on the blending which has been produced by nature. For example, how could we standardise, with any degree of accuracy, the medicinal action of rhubarb, cascara, or senna, or the appetising effect of compound infusion of gentian?

When we turn from physic to food this is still more evident. Nature supplies our food, from both the vegetable and animal kingdoms, of most complex and varied materials. It is true we roughly estimate their richness in nitrogen and carbon; but in health no one thinks of first isolating and then mixing definite quantities of starch, gluten, oil, fat gelatin, fibrin, casein, and albumen, with water, under any condition, and making a meal of them. The natural flavours would be lost, and appetite would pall before such a *menu*.

The Study of Pharmacy by Medical Men.

The practice of medicine and pharmacy combined, as is frequently the case in this country, is detrimental in many ways, both to those who carry on such practice, and to the public. Originally an apprentice to an apothecary served five years; this was afterwards reduced to one year, the other four being devoted to a compulsory curriculum after registration as a student, before he could present himself for his "pass" examination. Now the Apothecaries' Hall only requires a three-months' course of pharmacy and dispensing, and the conjoint board of the Royal Colleges of Physicians and Surgeons requires no stipulated time to be devoted to the subjects of pharmacy and materia medica, or even to chemistry. All that is necessary is that the schedules are signed to the effect that the student has received instruction in the different subjects to the satisfaction of a teacher, who, for pharmacy, may be a member of the Pharmaceutical Society. As there is no examination in practical dispensing, I fear the work is generally done in a very perfunctory manner, and that the knowledge gained of this subject is, in many cases, the minimum.

As it is much more important for a surgeon to know a sharp knife than to know the varieties of iron ore, so a physician ought to be acquainted with the medicinal preparations he prescribes, rather than with the crude drugs from which they are obtained. He should not be like the medical student, who, parrot-like, said of gum arabic: "It is soluble in alcohol and insoluble in water, or the reverse, but I am not sure which."

It is proposed that the compulsory course of medical study be extended to five years; but as these subjects, chemistry, pharmacy, and materia medica, may be studied prior to registration as a medical student, I think a course of six months' practice under the eye of a pharmacist would be of great service to the embryo medical practitioner before commencing his hospital career. The courses of chemistry and materia medica might be taken simultaneously, and probably under the same teacher.

Ready-made Mixtures.

If the coming race of medical practitioners receive no practical training in pharmacy they will have no confidence in prescribing, because they will never have known their medicines. They will thus become a prey to the advertising manufacturers of ready-made mixtures and specialties, in place of making use of official or officinal preparations. With the British Pharmacopœia more under the influence of pharmacists, as I expect in future it will be, and our Unofficial Formulary entirely under our own control, I trust in future we may be able to set before prescribers a better array of preparations than they have hitherto had.

If the medical licensing bodies do "throw physic to the dogs" quackery will become more rampant, as the public will have medicines, and have them "elegant" or agreeable to take. Not only so, but the public demands also to have them convenient for use, and in a stable and portable condition. The division of labour tends to perfect the processes of elegant pharmacy. The irresistible fact must be acknowledged, not only in pharmacy, but in all the arts and manufactures, that, though the making of preparations in a wholesale manner may in many cases be detrimental to retailers' interests, yet if it be for the public weal the practice will be irrepressible. The age of boluses is past, and the polypharmacy of former times will not go down in the present day.

Antiseptics and Anæsthetics.

As suggested by Mr. Umney last year, there would almost appear to be fashions in medicine. As antiseptics for surgical treatment, carbolic acid, boric acid, salicylic acid, eucalyptus oil, iodoform, permanganate of potassium, and chloride of zinc have all in turn found favour with surgeons. Now sublimate (perchloride of mercury) is most in favour, but even this fails to prove as germicidal as some experimenters have declared. For producing anæsthesia the conflict has for many years been between chloroform and ether, or mixtures of them with alcohol in addition, or by preceding their use by nitrous oxide. Lately, chloroform, although the most generally used, has fallen into great disfavour, on account of the accidents which have occurred during its use. I have never witnessed a death from its effects, but it has twice been my painful experience to be interviewed by anæsthetists soon after a death had occurred while they were administering the anæsthetic. There is something awful in the idea of having put a fellow-creature to sleep to wake no more. It would appear to be inherent in the nature of these anæsthetics to occasionally produce fatal results. Since its first introduction, chloroform of British manufacture has borne a good reputation; from whatever source it was made, it had a uniform specific gravity and freedom from known impurity. But no reliance on a manufacturer's name can rid us as pharmacists of the personal duty which we owe to the public, and to the anæsthetist in particular, to examine and test the purity of each lot of chloroform and ether we receive into stock, to store it carefully, and to see that it undergoes no change by exposure to light or other causes, especially if it is to be used for anæsthetic purposes.

The purification of chloroform has attracted much attention of late, through the introduction of M. Raoul Pictet's process of crystallising it at a low temperature and thus obtaining it in a condition represented to be perfectly pure, stable, and of specific gravity 1·51—a higher gravity than has hitherto been attainable.

Advertised Nostrums.

Latterly, a vast number of special preparations and nostrums have been introduced, which, on account of their being advertised and in popular demand, we are obliged to supply; still, in regard to these we are not answerable But, although we cannot breathe a word of praise in their favour, the identical article demanded should be supplied, unless it be to the detriment of the purchaser, in which case we must, in his own interest, advise him. The goods a merchant sells, or a manufacturer makes, represent him; he stamps them with his character; they should be *bonâ fide* what he professes them to be. As pharmacists, our responsibility is great in regard to these points, as we have to judge such a number of drugs and preparations and test their purity. As to the uses to which our wares and medicines are put when they are medically prescribed in proper doses, we are not accountable; but we cannot rid ourselves of a moral responsibility when we retail them in the ordinary conduct of business.

Synonyms and the Pharmacopœia.

Dr. Attfield's report to the General Medical Council for 1890, on the revision of the British Pharmacopœia, 1885, has just been presented. It deals principally with the question of synonyms. If the British Pharmacopœia is to be the commercial as well as the pharmaceutical, or rather medical, standard for the preparations it contains, and the proposed synonyms are tacked on to the official preparations, I fear that, notwithstanding Dr. Attfield's reasoning, pharmacists will often be placed in greater doubt or difficulty, and even danger, than they are at the present time. For example, if the synonyms of the British Pharmacopœia are to be accepted commercially, then, according to it, if asked for arsenic, we must supply white arsenic or arsenious anhydride; to sell it coloured it will be adulterated, yet we are not allowed to sell it otherwise retail. Although I hold to a high standard of purity for medicines, I think that if the official list of synonyms be extended it must be very carefully watched by pharmacists, else as traders they will be placed at a great disadvantage if it be made to include copperas, blue vitriol, white vitriol, or spirit of salt. Drysalters would be able to supply these in the crude condition in which they are used in the arts and agriculture, as they would not supply them as "food or drugs"; whereas pharmacists could not rid themselves of the responsibility of supplying them as drugs. Dr. Attfield suggests that nitre and saltpetre shall be synonyms of nitrate of potassium. The impurity in commercial nitre is of little importance to its use for domestic and veterinary purposes. Yet nearly all pharmacists use a purer preparation for dispensing prescriptions.

If we are to be liable to penalties under the Food and Drugs Act for supplying domestic remedies not up to a pharmacopœial standard, which other traders who sell the same are not to be subject to, then I hold we have a right to ask the Legislature to restrict to pharmacists the sale of drugs and preparations defined by the Pharmacopœia.

Most of Dr. Attfield's report is devoted to the vexed "milk of sulphur" question. As he justly says, at the present time two distinct substances are sold under this name. He suggests that in the next revision of the Pharmacopœia "milk of sulphur" shall be a synonym of "precipitated sulphur." Calcareous precipitated sulphur could then only be supplied when the seller knows that the buyer requires this variety; yet it could not be labelled "milk of sulphur," but with a distinctive label, such as "Milk of Sulphur, P.L., 1746." Practically this means the extinction of the sale of calcareous milk of sulphur; and as, so far as I know, milk of sulphur is only used medicinally, although we should lose a relic of ancient pharmacy, yet most pharmacists and the community at large would, I think, part with it without regret.

OPPORTUNITIES.

The everyday routine of dispensing may not develop the common mind, but to others, who observe and reflect, our avocation affords rare opportunities. The manipulative training which produces the expert pharmacist will develop the expert chemist, and if he has a corresponding mental capacity, the early training with a pharmacist enables such an expert, when fortunate enough to obtain a good chemical training, to become one of the best workers in chemistry. But the combination of the manipulative expert with a mental capacity well trained to the work is rare; such men are sought after, and generally leave our ranks, either for more remunerative or more congenial employment. It would be invidious to mention the names of those who have done so, whether living or dead.

FILIAL RESPECT.

During the past year we have had from the Research Laboratory of the Pharmaceutical Society important papers on pure salicylate of sodium, or rather salicylic acid, demonstrating that the purity of these, when administered internally, should be beyond reproach. From this source also we have had a chemical definition given to the official aconitine, with the promise of further investigations on the aconite alkaloids.

In reviewing the events of the year we cannot overlook those connected with our parent, the Pharmaceutical Society, which has just passed the jubilee of its existence. The cordial greeting it received on this occasion from all quarters showed the general appreciation in which it is held, notwithstanding the difficulties of its position as an educational, examining, and executive corporation. Its Council has endeavoured to promote the interests of pharmacy by attempting to carry through Parliament a Bill which would regulate the course of study before a candidate should come up for his pass examination; but, on account of the block in our legislative machinery, the Bill could not be proceeded with.

A revised syllabus of the examinations of the Society has been issued, and its scope will come into force in October next. This, it is hoped, will better define the course of study for candidates. In an address which I delivered at Sheffield in October last I drew attention more especially to the defects of the Preliminary examination, as a test of knowledge on which to raise a satisfactory superstructure, and suggested that it should be extended to include the rudiments of mathematics and geography, and a knowledge of a modern language, French or German. The subject has since then been much discussed, and there seems to be a widespread feeling of the desirability of such an extension, which is warranted by the facts of the case. An ignoramus is not adapted for our calling. The public considers us to possess general intelligence, and as our pharmacies have an open door it is not slow to make use of our acquirements. The "schoolmaster is abroad," and we must be prepared to hold our own in the struggle for existence. Practical men find that only the knowledge they make use of is retained, but no bounds can be set to the requirements of the pharmacist in this respect.

THE LATE MR. BRADY.

In conclusion, it is with regret that I record the death of a past President, its first Treasurer, and a Founder of the Conference. In losing Henry Bowman Brady, who for many years "the cross of suffering bore," and folded his "pale hands so meekly" on January 10 last, we lose one of the landmarks of pharmacy. Not only was he an accomplished pharmacist, but a man of science, chemist, biologist, and microscopist, whom we all delighted to honour. He has remembered his poorer brethren by a beneficent legacy to the Benevolent Fund of the Pharmaceutical Society, and his name will long be held in reverence in Newcastle, where the Conference had its birth.

The address was listened to with marked, but subdued, attention. Seldom have we seen so attentive and undemonstrative an audience at these annual meetings. Perhaps the presence of the Mayoral-Lord was the cause of this; perhaps the rather intricate and technical character of the first part of the address was rather difficult to follow; however that may have been, it was noteworthy that, whenever Mr. Martindale touched practical, or what we may call the more popular, departments of medicine and pharmacy, applause became more frequent. There was a laugh now and then, and sympathetic silence when the use of anæsthetics was referred to, other familiar topics also being well received. On the whole, the feeling of the meeting was that the address was a success. It certainly was well delivered. Immediately on its conclusion the Mayor and Town Clerk retired.

Mr. G. F. SCHACHT (Bristol) said he had great pleasure in proposing a vote of thanks for the able and interesting address given by the President. It was quite to be expected that an author who had given the pharmaceutical and medical world such valuable treatises as had come from their President would on that occasion present them with an able scientific purview of pharmaceutical effort. He was quite sure they would agree with him that that anticipation had been completely fulfilled. He confessed that he was at one moment a little nervous lest their President should somewhat unduly emphasise the importance of the synthetical remedies which had been lately disclosed to them for the use of medicine; for, belonging a little bit to the older school, he did sometimes feel rather nervous lest attention should be too much drawn in that direction. It was not for him to indicate what shape the practice of medicine should take in the future; that depended upon the investigation and struggles of those who were connected with that order of their work. But he never could divest himself of the recollection that man was a very complex creature indeed. His organisation was primarily very complex, and therefore it seemed to the speaker so much more probable that the exact definite power of chemical remedies must be a matter of the future—a long way in the future; and that for a time they should be content to adopt the teaching of others, and accept the remedies which nature herself had provided in a somewhat complex form for somewhat complex cases. He was very glad when the President came to that part of his address in which he allowed that some therapeutical preparations might be still of very great value to the practitioner. These were points which the President would forgive him for referring to. He mentioned them that they might enable him to say that not a single line of his address should be omitted in his (the speaker's) careful study of it when he got it in his hand. He had no doubt it was a very valuable contribution. One other point he wished to refer to, and that was where the President indicated how useful and valuable it would be in the progress of medicine that the labours of medical men proper and pharmacists should be made more on set lines, and that they should work more together, so that their mutual labours might be more valuable. This was a point of very great importance, for which he thanked the President. He had great pleasure in moving a vote of thanks to the President for his address. (Applause.)

Mr. Alfred Coleman was to have seconded the motion, but was absent from the theatre at the moment, and

Emeritus-Professor REDWOOD stepped into the breach, and on rising to second the motion was received with loud applause. He said: I have great pleasure in seconding the motion which has been made by my old friend Mr. Schacht, that the best thanks of the meeting be presented to our President for his very able address. I can say this most honestly and emphatically—I cannot call to mind any previous address, delivered for so many years now on these occasions, that has appeared to me to be more valuable and more apt and suitable for the period at which it was presented than that which we have just received from our President. It was quite to be anticipated, as Mr. Schacht has stated, that Mr. Martindale, who has been associated for so many years with the practical details connected with pharmacy, should acquit himself most creditably on that occasion. (Applause.) I have only to add to what has been so properly stated by Mr. Schacht that it appears to me that, pharmacy having now attained towards—or, at any rate, having progressed towards—the later stages of its development, it is quite obvious, and could not have been more forcibly shown to be necessary on the part of pharmacists, that some efficient system of pharmaceutical education should be pursued for the future, far different from that which took place some—I may say, I believe, just seventy years ago—(laughter and applause)—when I was a boy and first commenced my pharmaceutical studies in this town of Cardiff. (Loud applause.) I look upon myself rather, therefore, as a Cardiff pharmacist. (Renewed laughter.) The time I spent here with a relative—the late Mr. Vachell—was not a lengthened one, for ambition prevailed in my mind, and my ambition was that I should have an opportunity of studying pharmacy where it was carried out upon a more extensive scale than was then the case here—(laughter)—for Cardiff at that day, had a population of some four or five thousand, when there were neither docks nor railroads here. Therefore, I speedily left Cardiff for London, where I have spent the remainder of my days. (Applause.) All I can say is that for the future the preparation of pharmacists—for it has now approached a higher estate—should receive greater attention, and, at the same time, a practical addition to education is becoming absolutely necessary. It would be a great pleasure and gratification to me if, in the declining years of my life, I should be able to recognise in Cardiff a good, practical, and efficient school, established for the education of rising pharmacists. (Applause.) I wish to second the vote of thanks to the President. (Renewed applause.)

The motion was put to the Conference by Professor Redwood, and was carried unanimously.

The **President** said he was much obliged for the vote of thanks they had bestowed upon him for the humble effort he had made in giving the address that morning. He was afraid he was not a very good speaker; but he hoped they had been so far able to hear him at least. He then briefly reported on the publication of

THE UNOFFICIAL FORMULARY,

explaining what had been introduced and what had been taken out of the book, which was republished last month, and fully referred to in THE CHEMIST AND DRUGGIST at the time.

Mr. **Naylor** then read an abstract of a

REPORT ON IPECACUANHA.

PART I.—GENERAL PROXIMATE ANALYSIS.

By R. A. CRIPPS, F.I.C., and A. WHITBY.

The authors confined themselves in this paper to the general preliminary analysis of the drug.

One hundred grammes of the root in No. 80 powder were packed in a percolator, and exhausted successively by means of petroleum ether, absolute ether, and alcohol 65 over proof, the powder being dried by exposure between each extraction. The marc was then macerated with water, the watery liquid decanted, the treatment repeated, and finally the residual root was exhausted with solution of sodic hydrate 0·2 per cent.

1. *Petroleum Ether Solution.*—The solvent was distilled off, and the residue dried on the water-bath was found to be equivalent to 0·28 per cent. Treated with cold absolute alcohol it left a greyish white insoluble matter, not entirely redissolved by petroleum ether, and of a waxy nature. The portion soluble was titrated with $\frac{NaHO}{10}$, and was found to contain free acid equal to 0·16 per cent. of oleic acid. Only a mere trace of volatile oil was found.

2. *Ethereal Solution.*—Yielded 0·28 per cent. dry extract, which, treated with cold water, cold alcohol, and boiling alcohol, yielded matter:—

(*a*) *Soluble in water.* Contained a mere trace of alkaloid, no sugar, but assumed a green colour with ferric chloride. Probably allied to catechin or quercitrin.

(*b*) *Soluble in cold alcohol.* Contained a trace of alkaloid, and a substance possessing the properties of an acid resin.

(*c*) *Soluble in hot alcohol.* Not further examined.

(*d*) *Insoluble in hot alcohol.* Probably an indifferent resin.

3. *Alcoholic Solution.*—Total volume, 730 c.c., gave 10·37 per cent. dry residue. One half was distilled until all spirit was dissipated, treated with cold water, filtered, and the insoluble matter washed, the filtrate made up to 100 c.c., giving (*a*) a dark brown solution, (*b*) an insoluble brown residue.

(*a*) *The dark brown solution* contained tannin, dextrose, saccharose, and alkaloid. For the estimation of alkaloid 25 c.c. were introduced into a separator and rendered acid, and agitated successively with petroleum ether, ether, and chloroform, then rendered alkaline with ammonia, and agitated with ether, and finally chloroform.

Petroleum ether extracted nothing from the acid solution. Ether removed an acid resin with traces of alkaloid, while the chloroformic extract gave evidence of an alkaloid which, if not emetine, is closely allied to it, with an acid resin and a glucoside slightly soluble in water. The absence of a precipitate with barium hydrate showed that the glucoside was not saponin, although the solution frothed considerably.

Ether removed from alkaline solution a nearly colourless alkaloid, rapidly and completely soluble in weak hydrochloric acid, rectified spirit, and alcohol.

The ethereal solution gave a perfectly white precipitate with petroleum ether.

The alkaloid answered all the general reactions ascribed to emetine, but seemed purer than is usual.

Chloroform removed from the alkaline solution a dark-brown alkaloid, giving evidence of a crystalline nature, and, in solution, slightly fluorescent. The usual alkaloidal reactions gave somewhat different results to those obtained with the ether alkaloid.

The aqueous liquid remaining after the removal of the above-named solvents was neutralised and then evaporated to dryness with magnesia, and powdered. The powder, boiled successively with ether, chloroform, and alcohol, gave, besides the sugars, a resinous body, colouring-matter, &c.

(*b*) *The insoluble brown residue* yielded phlobophane and an indifferent resin.

4. *The Aqueous Solution.*—Total extract, dried at 100° C. = 15·26 per cent., containing 1·3 per cent. of ash.

This extract contained mucilage, dextrin, sugar, organic acids, and albumen.

For the estimation of the last substance, 10 grammes of root were treated with cold water and filtered. Twenty-five c.c. of the filtrate, mixed with 5 c.c. of a saturated solution of salt and a few drops of acetic acid, boiled, the precipitate collected on an asbestos filter, washed with hot water, then with 40-per-cent. spirit, dried and weighed, ignited and weighed again, the difference giving the albumen precipitated by boiling. Another 25 c.c. precipitated by a dilute spirituous solution of tannin in the presence of salt and acetic acid, filtered under pressure, washed, and dried, gave total albumen.

The solution was also found to contain mere traces of legumin and a dark coloured alkaloid.

5. *Alkaline solution* yielded pectin, albuminoids, and ash.

6. *Estimation of Starch, &c.*—The residue of the 10 grammes used to estimate albumen was boiled with 1 per cent. hydrochloric acid for four hours, filtered and washed, diluted to 1 litre, and the sugar estimated.

7. *Cellulose, Fibre, &c.*—The residue from 6 was dried and weighed.

8. Moisture and ash were taken on the root, the ash consisting of potassic sulphate, calcic and magnesic phosphates, calcic carbonate, ferric oxide, a trace of sodic chloride, and silica.

The following table expresses the results obtained:—

Moisture	10·85
Volatile oil	Trace
Free fatty acid..	0·16
Neutral fat	0·11
Wax (?)	0·03
Acid resins soluble in ether..	0·25
Indifferent resins	0·23
Substance allied to quercitrin	0·03
Tannin (total)	1·13
Phlobophane	0·34
Saccharose	2·12
Dextrose (total)	4·06
Dextrin	2·08
Mucilage	3·81
Albumen precipitated by boiling	3·10
Albumen not precipitated by boiling	0·23
Albumen, pectin, &c., insoluble in water	3·34
Albumen not precipitated by alcohol	3·12
Organic acids and allied bodies	1·48
Alkaloid removed by ether from alkaline solution ..	1·91
Alkaloid removed by chloroform	0·24
Alkaloid, &c., removed by chloroform from acid solution	0·10
Alkaloid from aqueous extract	0·17
Colouring matter and decomposition products	2·52
Resinous (?) matter not removed by agitation with ether, &c.	0·07
Starch	44·44
Cellulose, lignin, &c.	11·30
Ash	2·43

The authors found no trace of a volatile alkaloid in the distilled solvents employed for extraction.

Following this was a volunteer paper read by Mr. NAYLOR, and entitled

PREPARATIONS OF IPECACUANHA.

By W. H. SYMONS.

In this note the author commented upon certain preparations of ipecacuanha which had been made for five years. The root used contained 12·8 per cent. of moisture, and 3 oz. of it yielded 265 grains of dry extract, the equivalent of about 90 grains per oz. Forty-five grains of this made into a paste with lime and ammonia water, and after twenty-four hours dried and exhausted with chloroform, yielded 1·98 grains of impure emetine. Some of the extract was made into vin. ipecac., using Gilbey's Castle G sherry, a second sample being made with detannated sherry. From the same root vin. ipecac. B.P. 1867, acet. ipecac. Y.B. 1872, a proof spirit tincture, a 10-per-cent. spirit tincture, and a tincture the same as the last, but with 1 drachm of liq. ammon. B.P. in each pint were made. The samples had been kept in stock for five years, and samples were taken (without filtering), which were submitted to the meeting. These showed that the ammoniated tincture was the one which had stood the test of time, being perfectly clear and unaltered. As the preparation contains only 1 grain of real ammonia in 1 oz., it obviously possesses merit which should attract the attention of pharmacists.

The PRESIDENT said the samples would be handed round. He wished to emphasise the statement that Messrs. Cripps and Whitby's paper was only the first part of their report on the chemical composition of the drug. It would be noticed that the authors found, in addition to emetine, small proportions of other alkaloids—one soluble in ether and another in chloroform.

Mr. NAYLOR said he was glad to observe that in this paper the authors had made reference to the presence of free fatty acid in ipecacuanha root. So far as he was aware, no mention of this fact had occurred in any of the well-known text-books. The fact had been known to himself for some considerable time, and, if the gentlemen who prepared the paper liked to work further upon the question, he could supply them with a good deal of crude material for so doing. It was also interesting to note in the paper the percentage of emetine that had been obtained from the ipecacuanha root. Of course they knew that some years ago many large percentages of emetine were found; and then, more recently, the results seemed to show that these large percentages were exaggerations—that, in fact, the emetine was not extracted in anything like a pure condition. Now they seemed to be moving once more in that upward direction, and they had got emetine, from 1½ per cent., at which figure he believed it stood perhaps five or six years ago, practically back again to 2 per cent.

Mr. D. B. DOTT was not quite clear about the percentage of starch. It struck him that the process of separation employed would take out other matters which would afterwards be reckoned as starch in the Fehling estimation. In regard to Mr. Symons's paper, he thought it was objectionable to have advertisements of particular wines, and he was not sure that the addition of ammonia was the proper way to bring about permanency in pharmaceutical preparations of the drug.

Mr. RANSOM said in experiments which he had made some years ago he had obtained from 1½ to 2 per cent. of emetine, and he was pleased to hear that the authors confirmed this high percentage, for he was decidedly of opinion that the statement of Flückiger that ipecacuanha rarely contains more than 1 per cent. of emetine is erroneous. He was interested to hear that an alkaline preparation of the drug was permanent, and he thought that it would be a valuable preparation.

The PRESIDENT explained, in reference to the remarks regarding the high percentages of emetine, that the authors were careful to describe the figures as referring to "alkaloid soluble in ether." As Mr. Dott had stated, the percentage of starch was high, and some error might have crept in through conversion; but there were some samples of root which contained more starch than others, and probably Mr. Cripps had got an exceptional sample.

Mr. COLLIER said that there was one application of ipecacuanha perhaps not generally known. At Guy's Hospital it was very largely used as an application in the treatment of anthrax. The treatment consisted in the internal administration of the drug, and also in its external application after removal of the pustule. A number of experiments were conducted in the biological laboratory there as to what it could be in ipecacuanha which had this effect—what destroyed the particular tubercle. He first tried ipecacuanha, and found it undoubtedly had the power of checking the growth of anthrax bacillus. He had prepared solutions of emetine, and they found that these were perfectly useless in checking the growth of the bacillus. He (Mr. Collier) suggested that possibly it might be due to the volatile bodies which were present in the root, but he found now that the amount was so small that it could hardly be due to volatile oil. The fact that the emetine was not the principle which was of value in the treatment of dysentery he thought had been shown, for ipecacuanha deprived of its emetine was valuable in checking that disease—in fact, more valuable than entire ipecacuanha. As to what particular substance in ipecacuanha it was that produced this effect he could not possibly say. The subject before the Conference was a very important and interesting one. And he added, in regard to the experiments in Guy's Hospital, that full reports as to the results found in the biological laboratory and the treatment of anthrax with ipecacuanha had been issued by the hospital.

Mr. J. C. UMNEY said that Ahn had found 0·3 per cent. of volatile alkaloid in ipecacuanha, but no mention was made of such an alkaloid in the report which had been laid before the meeting. He hoped that the authors had not overlooked it.

Mr. ALBERT HAGON (Cardiff) asked if the ammoniated preparation of ipecac. would be as nasty as the ammoniated tincture of quinine. If it were, it would not be very popular, for ipecacuanha was largely used for children.

The PRESIDENT pointed out that ammonia was often associated with ipecacuanha in bronchitis preparations, so that there was little objection to the suggestion on that score. It might not do to add ammonia to the wine, but as a tincture he thought the suggestion was reasonable.

Mr. T. HOWELL WILLIAMS said that that was what Mr. Symons recommended—a tincture containing 10 per cent. of alcohol and such a small proportion of ammonia as to be perfectly unobjectionable. He assured the meeting that the keeping properties of the preparation were marvellous and perfect. (Applause.)

Mr. A. W. GERRARD said there was no doubt that many of our drugs could be extracted efficiently when a small proportion of alkali was added to the menstruum. That fact was well exemplified in the case of ergot, and there were many drugs containing tannic acid which could be more completely extracted with a weak alkaline menstruum, because the alkali combined with the tannic acid, freeing the alkaloid, and so enabling it to be dissolved. Almost any solvent, spirit and water for example, took up the alkaloid. It followed, therefore, that in the paper we had something which was practically useful, and which, from the therapeutic point of view, was not objectionable. He hoped the paper would be followed up by a good working formula for the ammoniated tincture.

Mr. Moss, speaking of the first paper, said that the process employed for estimating starch would certainly give high results. What struck him particularly was that the amount of pectic acid returned was surprisingly low. It might be that this was owing to the first percolate being heated; but anyone who had worked with extract of ipecacuanha must know that large quantities, apparently, of pectic acid, gave great trouble. From that one was apt to think that pectin was present in ipecacuanha in larger quantities than the authors indicated. Apart from this criticism, however, he desired to say that the paper indicated an immense amount of work—(hear, hear)—and reflected great credit on the industry and painstaking care of the authors. (Applause.)

Mr. Strother thought that a great deal of this difference of opinion in regard to such a thing as ipecacuanha would be avoided by people working on the same sample of drug. He suggested that the Conference should do something to remedy this defect, and commented upon the idiosyncrasy of some individuals towards ipecacuanha, in irritating the mucous membrane.

The President, in closing the discussion and moving a vote of thanks to the authors, said that they would not overlook the question of there being a volatile alkaloid present when they came to deal with the alkaloids in detail.

The next paper read was on

EXTRACTUM EUONYMI SICCUM.

By Michael Conroy, F.C.S.

The instructions contained in the Addendum to the British Pharmacopœia direct that this article shall be made by exhausting the root-bark of *Euonymus atropurpureus* with a menstruum composed of equal parts of rectified spirit (s.g. ·838) and water. The spirit is then distilled off, and so much sugar of milk added to the still fluid extract—the actual amount having been ascertained experimentally—that the final product shall contain 80 per cent. of dry extractive. The mixture is then evaporated over a water-bath until it becomes brittle. "The mass may then be powdered and kept in a well-corked bottle."

The last sentence is copied *verbatim* from the directions, and it is in reference to it that this note is concerned.

Whatever success may be obtained experimentally in making this article in a small way Mr. Conroy could not say, but it is certain that the process is not suitable for making it in quantity. The method is right enough until it comes to the powdering of the dried extract; but this is a serious matter indeed to the unfortunate individual who has it to perform. It is so extremely hygroscopic that the operation has to be performed in a warm, dry room, and even then it is with the greatest difficulty that it can be obtained in a pulverulent form. But success in this is not of much value, as the powder soon coheres and forms quite a mass again, even in well-stoppered bottles. The author had tried two ways to remedy this defect, each of which is an improvement. In the first the extract was dried on the water-bath without the sugar of milk, which was added, in the right proportion, during the operation of powdering instead. This was a great improvement, inasmuch as the extract dried better and powdered much more easily. The gradual addition of the sugar of milk during the operation of powdering prevented adhesion of the extract against the mortar, and gave greater freedom to the pestle. The resulting powder was paler in colour, and kept very well in stoppered bottles.

The other plan consisted in adding calcined magnesia, instead of sugar of milk, to the soft extract, and in other respects following the official process. This plan in every way proved a success. The extract dried rapidly, and practically lost all its troublesome hygroscopic properties. The operation of powdering was performed easily under ordinary atmospheric conditions, without any special precautions, and the pulverised extract remained a perfectly mobile powder.

Light calcined magnesia was used in the operation, but probably the heavy kind would also answer. The light kind was chosen on account of its greater bulk. As the improvement in the preparation is a mechanical one, due to the fact that the particles of magnesia envelope the powdered extract, and thus protect it from atmospheric influences, it appeared that the light kind would go farther in this respect.

Samples of the official kind, and the two others referred to in this note, are on the table for inspection.

Mr. Dott stated that his experience was the same as Mr. Conroy's. The dry extract had a distinct tendency to cohere. The only objection which he could think of to the process suggested was the introduction of magnesium—an insoluble matter. There was a great advantage in having something that would enable the extract to remain dry, and it would be good if they could find a soluble substance for this purpose.

Mr. Moss said that his experience in making the preparation somewhat differed from that of Mr. Conroy, he was sorry to say—or rather he was glad to say. What he had made corresponded exactly with the Pharmacopœia description. It was true it was hygroscopic, and round the neck of the bottle they would find whatever particles were left became resinous, and formed a kind of varnish; but the contents of the bottle remained separate—the particles were separate one from another. He was speaking of an extract which had stood for some months. He did not hear Mr. Conroy mention the time in which the preparation he made had acquired its coherent condition. One would expect that magnesia and phosphate of calcium in preparations of this character would no doubt act as Mr. Conroy said. But was that not travelling rather in the direction of the American makers of euonymin, who had been chidden by English pharmacists and examiners of drugs? It had been said that carbonate of barium had been found in some of the euonymin made by American manufacturers. How far were they to go in the same direction? It seemed to him that there were not many steps between calcined magnesium and carbonate of barium.

Mr. J. C. Umney had had an opportunity of making three rather large quantities of euonymin. In two out of the three instances he found no difficulty whatever in powdering the extract; but on the third occasion the extract certainly was reduced to a powder, but it agglomerated so much that the bottles containing it had to be broken, and the contents taken out. This, he thought, was due to oil probably contained in the bark.

Mr. N. M. Grose (Swansea) said as a user of the extract he found it gave a great deal of trouble, and caused the use of a number of adjectives not usually found in Johnson. (Laughter.)

The President said there was no doubt the preparation could be made according to the Pharmacopœia directions. It was quite probable that some samples of bark did not yield the average proportion of extractive matter; still, with only 20 per cent. of powdered sugar of milk, it might be made to keep in a good condition. They had the matter discussed a good deal in the Pharmacopœia Committee, and it was thought that sugar of milk was the most inert excipient powder they could have. That was why they adopted it. Though substances such as magnesia and calcic phosphate were suggested, they were all discarded in favour of what was considered the most inert and most acceptable excipient. The mass might then be powdered and kept in a well-capped bottle, but it was feared that if it were sent to warm climates the tendency would be that it would become agglomerated in a compact mass.

Mr. Naylor had done a little work on this subject. There seemed to be an impression amongst those who had spoken that the hygroscopic principle was the oil present in the extract. He believed that was not so. No oil at all would be found to be present in the extract when it was made as the Pharmacopœia directed. It was due to the extractive matter soluble in water, and that was why he objected to the B.P. process. It was a mistake. What they ought to have, and what was best, was the euonymin made by the selective method. Preparations made in this way were active, and if there had been proper appreciation of the constituents of the drug, they would not to-day have had that particular preparation in the Pharmacopœia. The euonymin made by the selective process was found to have a distinct action upon the liver, and on that account it was probable that it came into use in this country. The Pharmaspecial preparation had but a mild action on the liver. He regretted that a method was not selected which had for its object the extraction of the cholagogic principles, and separating them substances from a product which was known to be of comparatively little, if of any, medicinal value. He maintained, moreover, that the B P. dry extract had not come into favour, and it was the experience of manufacturers that it was little used in comparison with the old article.

Mr. DOTT said it was not known what preparations were used in these experiments of Rutherford's, so that it was difficult to ascertain to what the cholagogic action was due.

Mr. NAYLOR said the preparations employed were those which were then on the market, and he could say that there were none at the time at all like the B P. article. What he called the selective products contained the resins, and were most powerful, even griping, in their effects. He would like to see such preparations made official.

The PRESIDENT here remarked that the extract was intensely bitter, this taste apparently being due to the extractive matter, which was quite different from a resinous principle.

Mr. CONROY, being called upon to reply, said they had rather wandered off the subject of his paper. He maintained that there was a great difference between a harmless thing like magnesia and carbonate of barium, and he differed from Mr. Moss's views on the matter. There was a wide gulf between the two. He insisted that the extract, when kept in bottles for dispensing, did not keep, and that was the condition which they had to consider. The only objection to magnesia was that it was insoluble, but he pointed out that, as there was only 10 per cent. of it proposed, it could do no harm, but a great amount of good, as the preparation could be handled with comfort.

The next paper read was on

Indian Gums for Pharmacy Work.

By Dr. S. RIDEAL and W. E. YOULE.

The authors have recently had occasion to examine numerous specimens of natural and artificial gums, and have contributed a paper on "Gum Arabic and its Modern Substitutes" to the London section of the Society of Chemical Industry (see THE CHEMIST AND DRUGGIST, June 6, 1891, page 788). In the course of this investigation, which was primarily carried out with a view of determining the most economical soluble gums for envelope-work and for calico-printing, their attention was directed to the difficulties which pharmacists have had in recent years of obtaining a gum acacia suitable for their special wants. The Indian ghatti gums have from time to time been suggested in pharmaceutical literature as a substitute for the officinal gum acacia, but different investigators have arrived at different opinions as to their merits in this respect. Mr. Mander, in 1888, was one of the first to draw attention to the high strength of ghatti mucilage, and that such mucilage emulsified twice as much olive oil as the Pharmacopœia formula. Other pharmacists, however, were prejudiced against its use, owing to the comparatively large amount of insoluble gum present in most samples; but the authors show that the loss occasioned in this way is only apparent, as the mucilage from a given weight is of far higher strength than that of a completely soluble gum, notwithstanding this quantity of insoluble jelly, which has to be strained away.

In the paper already alluded to they gave a full account of the chief chemical and physical differences of the various natural gums, and pointed out the variation in the amount and composition of the ashes of these ghatti gums. Their optical behaviour and the viscosity of their solutions has also been examined, and they have devised an apparatus for determining the absolute viscosity of gum solutions, which possesses several advantages over the burette method and the viscosimeters which are occasionally used for these determinations.

The discrepancies which have arisen concerning the true value of ghatti gums are due partly to the variation in the gum itself, but chiefly to the different methods employed for making the mucilage. They point out that it is essential, in order to obtain a light-coloured mucilage, that the gum be ground and dissolved in vessels which are not made of iron, as small quantities of the oxide of this metal dissolve in the mucilage and react with the tannin invariably present in small quantities, giving the mucilage an inky, unpleasant appearance, which is fatal for any good results. The tannin in the bark, which is often adhering to the lumps of gum, is, however, not appreciably soluble in cold water, and, therefore, if cold water alone be used for making the mucilage the quantity of tannic acid dissolved is very small. When hot water is employed a considerable darkening of the solution takes place, even when the use of iron vessels has been carefully avoided. In order to make a mucilage of approximately the officinal strength (and here the authors point out that the Pharmacopœia recommends 1–2½, and also 2–3, on different pages), 1 part of gum to 8 of water is sufficient. It is thus a most economical gum to use, and, as at the present time it can be purchased at about half the price of gum senegal and other high-class soluble gums, they recommend its use for general pharmacy work. The following directions are given for preparing the mucilage:—The gum is first ground to powder in earthenware mortars, and a weighed quantity of the powdered gum is transferred to a large copper or earthenware vessel, covered with four times its weight of cold water, and the mixture well stirred for some time. When the gum has partially dissolved, and the smaller, insoluble aggregates have swollen up to large masses of jelly, the mixture is strained through muslin, and from the mass of jelly thus obtained the pieces of bark and foreign matter are removed. The jelly is then covered with a fresh quantity of cold water, equal in weight to the first, and is then stirred and allowed to stand for some time. The mixture is once more strained, and the second quantity of mucilage added to the first. In this way a clear, light-coloured mucilage is invariably obtained, of approximately the official consistency. It keeps well, and has the same suspensory power for making *mistura cretæ*, &c., and is as good in adhesive value for making the official lozenges. It can be compounded, if necessary, with a small quantity of alcohol, and in this respect differs from the gum-acacia preparation.

The PRESIDENT said that this subject was at present of great interest to pharmacists; but he was in hopes that when the equatorial district of Africa was opened up to commerce, there would be a plentiful supply of the official gum arabic. Meanwhile, however, they had to be content with such substitutes as they could obtain, and ghatti gum was one of the best they had.

Mr. STROTHER asked what strength of mucilage Dr. Rideal recommended, to which

Dr. RIDEAL replied "two to three."

Mr. STROTHER then proceeded to say that the mucilage would do for many things, but he could say, after twenty-five years' trying to make lozenges with it, he had failed and he was glad to hear that Dr. Rideal had succeeded. (Laughter.)

Mr. PETER BOA (Edinburgh) said he had had considerable experience with ghatti gum in making a mucilage for pharmaceutical purposes, and he had found that one to six or seven corresponded with the mucilage made from genuine gum acacia. It seemed to him that until they had an official recognition of this gum they could not use it instead of gum acacia for pharmaceutic work. It might very usefully and very satisfactorily be employed for certain purposes, but it produced different colours in some things. He had been less successful with the powdered variety of it than in the use of the gum itself bought in the rough state. In making the mucilage, he had found that it was better to select the globular and clean pieces, rejecting the vermiform bits, and by the usual means a very nice mucilage was obtained. It was very good for suspending purposes. In some instances it had a peculiar taste which could very readily be distinguished from the genuine mucilage of acacia. For certain industrial purposes it was, he believed, very successfully used, especially when ground up in the form of a paste. He knew that mosaic-workers used it, and they simply ground it up as people ground up mortar and spread it on in paste form. They told him that it gave results which were better than they had obtained from using gum acacia, for which they had to pay perhaps double or treble the price. (Applause.)

Mr. GERRARD'S objection to ghatti gum was that it did not give a clean mucilage. When they ground it up, and used the powder for making emulsions, they found that the portions of bark in the gum were precipitated, and gave the emulsion an objectionable appearance. He pointed out that Dr. Rideal spoke of viscosity and adhesion as if they were convertible terms. Did he consider that correct? He further pointed out that it was stated that ferric chloride gave up a precipitate with ghatti gum, but none with gum acacia. That did not correspond with his experience. All the gum acacia he had ever met with gave a precipitate with ferric chloride.

Mr. F. C. J. **Bird** stated that since Mr. Mander published his paper on ghatti gum, some years ago, he had made a large number of experiments with it, and he could endorse all that had been said about it by Dr. Rideal. It was his opinion that the trouble which had arisen was due to the people using unpicked samples of gum. Picked samples were perfectly satisfactory. They had simply to place the gum in water, stir it for half a day, and strain so as to get a satisfactory mucilage. He asked Dr. Rideal if he did not find that ghatti gum possessed a very peculiar odour.

Mr. **Dott** asked the author what advantage his viscosity apparatus possessed over the ordinary pipette.

The **President** corroborated Mr. Gerrard's remarks regarding the ferric-chloride test, stating that strong solutions of gum acacia did give a precipitate with the reagent; so also did borax. His objection to ghatti gum was that the mucilage was rather apt to become fungoid.

Dr. **Rideal**, in reply, said the criticism seemed to be rather conflicting. He believed Mr. Strother said he had been trying to use this gum for twenty-five years without success, and then they had Mr. Bird saying he had found it fairly good.

Mr. **Strother**: For lozenges only—that is my contention.

Dr. **Rideal**: It would not be, he thought, successfully used in making lozenges, although he believed lozenges were made with Indian gum.

Mr. **Strother** begged to state that that was so. (Great laughter.)

Dr. **Rideal**, continuing, said if they tried to make lozenges with this gum according to the Pharmacopœia formula, he thought they would fail. In order to make lozenges with ghatti gum they would have to make up a strong mucilage.

Mr. **Strother**: Thank you! It would be something like making champagne with gooseberries. (Laughter.)

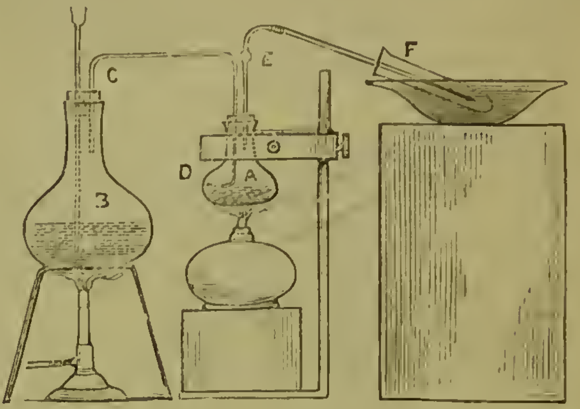
Dr. **Rideal**: Quite so. Picking out the vermiform lumps of the gum, as suggested by one speaker, was a very good idea, as they constituted the insoluble portion of the gum. He should think the darkening of the gum would be probably due to the mortar in which it was ground. It was not good to grind it in an iron mortar. Of course the gum was not as good as acacia. They could not expect to get as good gum for 40*s.* as, say, 80*s.* (Hear, hear.) With regard to the fungoid growth, he thought that was not true; the ghatti gum was a very good keeping gum. In the reaction with ferric chloride and borax the ghatti gum produced a greater precipitate than the ferric chloride; but it must be understood that he referred to very dilute solutions, and the facts which he gave only referred to such solutions.

Mr. **Naylor** then read a note on the

ESTIMATION OF VOLATILE OIL IN COPAIBA.

By R. A. Cripps, F.I.C.

Instead of conducting this operation in the ordinary way, by heating the copaiba in a dish at a temperature of 100° C., or for a shorter time at 150° C., the author prefers to drive off the oil by means of steam. The copaiba (about 5 grammes) is weighed into a small flask (A), into which steam is injected from the larger flask (B). The tube C D, which conducts the steam, is turned slightly upwards at D, in order to prevent undue splashing of the contents of flask A. The exit-tube from A possesses a bulb (E), which serves to retain any traces of resin which might be mechanically carried over, and from which it is rinsed out by spirit after the distillation is complete. As soon as sufficient water has condensed in A, the copaiba and water are heated by a spirit-lamp, the current of steam being still continued. Half an hour from the commencement of the injection of steam the oil will have been driven off, the flask E is disconnected, the tube D and bulb E rinsed with spirit, the whole evaporated and dried for half an hour in the air-oven at 100° C.



The difference between this and the original weight of copaiba gives that of the volatile oil. The advantages claimed for the apparatus and method are:—

1. Rapidity of working.
2. The resin is obtained in an unaltered condition, without darkening in colour.
3. By smelling at the mouth of the test-tube E, when the water in B *begins* to boil, the odour of turpentine is clearly perceptible if that substance has been used as an adulterant. This is the most delicate method for its detection.

The percentage of volatile oil obtained by the author in eleven samples of commercial copaiba was:—40·95, 45·0, 45·3, 46·4, 47·8, 48·2, 49·6, 50·4, 50·8, 53·3, 59·6.

The **President** thought this was a very neat way of ascertaining the percentage of the volatile oil.

Mr. R. H. **Davies** remarked that the author spoke of the absorption of potash; but, as far as his experience could guide him, this factor was not very reliable for the resin as long as the oil was present. He thought the apparatus was a very ingenious one. It was not particularly novel in itself, for the passage of steam through substances for the purpose of extracting volatile oils was perhaps the oldest mode of extracting such bodies. But, as regarded copaiba, the apparatus seemed likely to serve its purpose very satisfactorily.

Mr. John **Moss** said he had used the steam process for the manufacture of oil of copaiba for some time past, and he could speak as to the satisfactory nature of the results. In fact, anyone who had to perform the operation would find that steam was very necessary in distilling the oil. One advantage which it had over other processes was that it shortened the process considerably. He had not used anything like the bulb in the apparatus, but it seemed to him that it would be an improvement.

The **President**, in moving a vote of thanks to Mr. Cripps, remarked on the opportunity which the apparatus gave of detecting the presence of turpentine in the balsam.

Mr. **Moss**: Yes, but the author says there is none in it now. The only copaiba which they need be suspicious of was that which came from Hamburg, and which might be adulterated with gurjun balsam.

The next paper read (again by Mr. Naylor) was on

LIQUID PERSIAN GALBANUM.

By E. M. Holmes, F.L.S.

This paper dealt with the origin of the official galbanum. It is stated that galbanum is derived from two plants; *Ferula galbaniflua* and *Ferula rubricaulis*, and although Dr. Aitchison has of recent years done something to clear up the haziness which surrounds our knowledge on the subject, the author was of opinion that we are anything but clear regarding it. Commercial galbanum is of two kinds, Levant and Persian. The specimens of the former in the museum of the Pharmaceutical Society consist of (1) tears, (2) small lumps, and (3) agglutinated masses somewhat soft, and containing a proportion of adherent root. Persian galbanum is found in tears, and also as a brownish liquid of the consistence of Venice turpentine. Mr. Holmes fully described the characteristics of all these varieties, and their behaviour towards reagents, and concluded, from a bibliographical review of the whole subject and an examination of specimens, that all commercial varieties of galbanum come from or through Persia. Speaking of the various plants to which the origin of the gum resin has been attributed, he expressed the opinion that botanists have often been misled by natives, perhaps not intentionally, but because the same name is in the East often applied to different substances. For instance, Dr. Aitchison found *Ferula galbaniflua* (Boiss. et Bohn) in Afghanistan, and considered that this was a source of the drug, but Mr. Holmes has been able to prove, from the resin contained in this plant being different from ordinary galbanum, that it is not the source of the commercial drug. With it the whole subject and the origin of the liquid galbanum is, of course, involved, and he is led to the conclusion that the liquid Persian galbanum of commerce is derived from an undescribed species of *Ferula*, allied to *F. galbaniflua*. In chemical characters liquid Persian galbanum agrees closely with Levant galbanum, but differs markedly in odour, and the fruits found in it nearly approach those of *Ferula galbaniflua*, Boiss. *Ferula rubricaulis*, Boiss., does not yield galbanum, but a gum resin of alliaceous taste and odour; nor does the *Ferula galbaniflua* of Aitchison afford galbanum.

The PRESIDENT said it was an exceedingly difficult thing to obtain true galbanum. Getting the drug at all bearing the character of true galbanum for the last two or three years had been a great difficulty. Their thanks were due to Mr. Holmes for his paper. It was a subject that he, along with all subjects of importance in materia medica, took a great interest in, and they were pleased to have his assistance in the way of identifying the sources of this drug, if possible. Mr. Holmes had sent several microscopic slides which could be examined at the end of the meeting.

The following paper was then read :—

A SHORT DESCRIPTION OF THE PRESENT AND FUTURE WATER-SUPPLY OF CARDIFF.

By THOMAS HUGHES, F.I.C., Public Analyst for Cardiff.

As will be seen from the present census, the population of Cardiff has increased very rapidly of late, and several years ago the corporation, foreseeing this, determined to increase the supply of water, and concluded to expend no less than 373,000*l.* in order to get a large and pure supply from the Upper Taff Valley. At present there are two sources whence the present public supply is taken—viz , the Ely pumping-station and the gathering-ground of Lisvane and Llanishen.

The water from the Ely pumping-station is obtained from headings, or culverts, driven into the magnesium limestone for collecting the water. Although, no doubt, some river-water percolates through the gravel and sand of the bed of the river into these headings, yet the bulk is obtained from the stratum itself, as the water pumped is much harder than that of the river. The total solid matter in solution in the river-water varies from 18 to 20 parts per 100,000, and the total hardness is about 12 parts, whereas that from the stratum has about parts of solid matter in solution and a total hardness of from 28 to 30 parts.

The amount of water obtainable from this source is about 1,000,000 gallons per day. There is a good deal of cultivated land about the gathering-ground, and the stratum, being somewhat broken or fissured, permits the surface-polluted water to travel considerable distances, and it will be seen from the undernoted analyses that the water obtained from this station contains distinct traces of nitrates. This source cannot be considered all that is desirable for a public supply, for—apart from the somewhat suspicious character of the gathering-ground—it contains an excess of magnesia and other hardening salts, and is unsuited for such domestic purposes as washing.

Analyses of Water from Ely Pumping Station, in Parts per 100,000.

—	Total Solid Matter	Albuminoid Ammonia	Free Ammonia	Nitrogen as Nitrates	Previous Sewage or Animal Contamination	Chlorine as Chlorides	Sulphuric Acid as Sulphates	Magnesia Salts	Hardness			Date
									Temporary	Permanent	Total	
A	32·25	0·004	nil	0·14	Trace	1·95	3·[illegible]9	Excessive	15·6	14·5	30·1	1890
B	30·8	0·0[illegible]2	0·002	0·[illegible]2	"	1·85	3·20	"	15·0	14·3	29·3	..
A	30·0	0·007	0·003	0·[illegible]3	"	1·75	3·22	"	15·2	12·3	27·5	1891

A.—These samples were clear and practically colourless.
B.—Sample of a faint yellow colour, but clear.

The sources whence the Llanishen and Lisvane reservoirs draw their supplies are the streams Nant Mawr, Lanishen Brook, Nant Draw, Nant Felin (two branches), and Nant Dulas, which rise in the gathering-ground formed by the Lisvane Hills occurring to the south of the Caerphilly Range.

This gathering-ground embraces an effective area of about 2,200 acres, consisting of mountain, arable, and pasture land by no means highly cultivated, and so tolerably free from manurial pollution. One of the brooks in the north-east of the water-shed passes through ground of a peaty character, and is usually strongly coloured with organic matter, which confers a somewhat peaty character to the whole supply. These streams yield about 2,000,000 gallons per day, of which the greater proportion is obtained from the Nant Mawr and the Llanishen Brooks, although the former stream has occasionally become turbid and discoloured from marly matter in suspension obtained from the red marls covering the Old Red Sandstone, which forms part of the gathering-ground, and through which the stream passes.

Owing to the large amount of water rising as springs from a band of carboniferous limestone on the north-west portion of the water-shed, the supply is rather hard, though much less so than that of the Ely, as will be seen from the analyses.

For a town supply the chief objections to this source are the amount of organic pollution—although this is not, as a rule, excessive—and its hardness. There is also the restricted character of the gathering-ground to be considered, and the tendency to growth of population in this district, with its increased risk of pollution. No doubt the present supply—the best of the water being taken—will form a valuable adjunct at need; but there can be no doubt that a further and purer supply will soon be urgently needed, and this is to be procured from the Taff Fawr Valley. The present sources yield about 20 gallons per head of the population.

The river Taff, which passes through Cardiff, takes its rise in the Blaen Taff, between the Gryn and the Beacons in Breconshire, and it is from this valley that the new water-supply is to be taken. The valley is on the Old Red Sandstone, and its available rainfall is considered to be about 35 inches, as against 17 inches in the Lisvane gathering-ground.

The total area of the new water-shed is estimated at 10,400 acres, and consists of mountain pasture land.

The portion of the scheme already in hand, and approaching completion, takes up a drainage area of 4,000 acres.

These works consist of one storage-pond at Crew Isaf, called the Cantreff Reservoir, having a storage-capacity of 320,000,000 gallons, with the necessary pipe-line to Llanishen, three relieving tanks *en route*, and a small covered reservoir of 500,000 gallons capacity, with filter-beds at Rhewbina. This latter tank is to be used for the supply of Llandaff, Penarth, and other high-lying places, by gravitation. The large reservoirs already at Llanishen are to be used as distributing-ponds in the new works, and into which the Taff Fawr water will be finally discharged on its way to Cardiff. The estimated cost of this portion of the works is 240,000*l*. Mr. Williams, the borough water engineer, estimates that when the Cantreff Reservoir is completed and filled, and the two storage-reservoirs at Llanishen and Lisvane are filled with Taff Fawr water, amounting to 700,000,000 gallons, the district of Cardiff can be supplied, by judicious management, with nearly 4,000,000 gallons per day in a very dry year like 1887, after providing the statutory quantity of compensation water to be sent down the river for the upper 4,000 acres of gathering-ground, amounting to 2,979,000 gallons per twenty-four hours.

Analyses of Water from Llanishen Filter-beds, in Parts per 100,000.

—	Total Solid Matter	Aluminoid Ammonia	Free Ammonia	Nitrogen as Nitrates	Previous Sewage or Animal Contamination	Chlorine as Chlorides	Sulphuric Acid as Sulphates	Magnesia Salts	Hardness Temporary	Hardness Permanent	Hardness Total	Date
A	18·4	0·009	0·001	0·01	—	1·6	1·68	Slight	3·8	12·6	16·4	1890
B	17·8	0·009	0·002	0·02	—	1·55	1·95	"	3·5	12·8	16·3	..
C	18·8	0·012	0·002	nil	—	1·45	1·88	"	5·0	11·9	16·9	1891

A.—Sample clear and of a very faint yellow colour.
B.— " " " "
C.—Yellowish colour, but clear.

The quality of the water is excellent, being very soft and most favourably free from organic contamination. The total solid matter in solution varies from 6 to 8 parts, and other constituents are satisfactory, as may be seen from the analyses quoted under.

In its chemical constitution the water closely resembles that of the Manchester supply, but is superior to i in its physical conditions.

It also resembles the Loch Katrine water, but is somewhat harder, which, however, is, in my opinion, by no means a drawback.

The bleak and uncultivated character of the district, and its distance from centres of population, appear sufficient to guarantee safety from future pollution, and this, taken with so much as is known of the character of the water, and its almost unlimited abundance, seem to show that in going to its natural gathering-ground, Cardiff has obtained one of the finest in Great Britain.

In conclusion, I beg to express my thanks to Mr. J. W. Thomas, my predecessor, for the use of his notes and work on this subject, and to acknowledge my indebtedness to the report of the borough water engineer and Mr. Priestley.

Analyses of Taff Fawr Water, in Parts per 100,000.

—	Total Solid Matter	Albuminoid Ammonia	Free Ammonia	Nitrogen as Nitrates	Total Nitrogen Found	Previous Sewage or Animal Contamination	Magnesia Salts	Chlorine as Chlorides	Hardness Temporary	Hardness Permanent	Hardness Total	Date
Taff Fawr Hendre Isaf ..	6·4	0·0055	0·003	0	0·008	0	—	0·75	0·1	4·3	4·4	1881
Taff Fawr Crew Isaf	8·0	0·0035	0·002	0	0·005	0	—	0·62	1·5	3·2	4·7	1881
Taff Fawr..	5·6	0·005	0·002	0	0·007	0	—	0·75	0·4	3·5	3·9	1890

All samples clear and practically colourless.

The PRESIDENT said the water-supply of large towns was at the present time a very interesting subject, and considering the rapid growth of the population of Cardiff during the last ten or fifteen years, it was well to look ahead. They were glad to learn that this was being done in this important centre, and that they would have a supply from the upper reaches of the Taff, which would be such in the matter of purity that it would compare with the Manchester and Loch Katrine supplies. He would like to know what was the degree of hardness of the water in question. It was mentioned in the paper that that from a certain stratum was exceedingly hard, as much as 28 to 30 degrees, while another supply from the river had only 12 degrees of hardness. He would also like to ask, Was the supply at all opalescent?—such magnesia-containing water being apt, when exposed to the air, to deposit opalescent carbonate of magnesia. An efficient and pure water-supply was a most important subject in reference to the health of large towns.

Mr. JOHN BARCLAY (Birmingham) inquired what action, if any, the water it was proposed to use had on lead. Many moorland waters, being so soft, and containing so little salts in solution, had a strong action on lead. In Sheffield it had been found necessary to add lime to the water, as there had been a great many cases of plumbism, owing to the soft water acting on lead pipes.

Mr. R. H. DAVIES asked Mr. Hughes to give the amount of organic matter in the proposed water. Mr. Hughes had told them it was very free. It was gratifying to find a large town like Cardiff going to work in this manner, and making such ample provision for the water-supply of the inhabitants.

Mr. D. B. DOTT said he should think the composition of this water, as far as he had been able to gather, was very much like the water supplied in Edinburgh, and therefore he would not think it would have much action on lead, as the water of Edinburgh had no action of the kind. The present supply, Mr. Hughes had stated, amounted to only 20 gallons per head. That would be considered a very small supply in Edinburgh or Glasgow.

Dr. Rideal said in several towns a remedy existed for the risks from lead piping and cisterns, by using lead containing a small percentage of tin, which was not acted upon by soft moorland waters. The advantages to be derived in a town from a soft supply were very considerable, and it was worth while spending a little extra time and energy in working this lead-tin alloy into pipes and cisterns for large towns. (Applause.)

Mr. Schacht asked if there was any chance of the magnificent mass of water which was being pumped out daily from under the Severn Tunnel being turned to the purposes of some large town. He was aware that it was not comparable with moorland water, but he was given to understand that its impurities could be remedied, and that it was possessed of one great advantage—its almost absolute freedom from organic matter of any kind whatever. At one time it was seriously contemplated to introduce the water into Bristol in addition to the present supply, but the project was defeated by the opposition of the existing water company. One of the chief grounds of objection consisted in its being so largely contaminated and containing so large a proportion of saline matter. He was astonished at the absolute purity of the water from organic matter. Another argument against the use of the water in Bristol was the fact that another tunnel would have been necessary to bring it into the town.

Mr. S. R. Atkins (Salisbury) asked what relation the purity of a public water-supply bore to the health of the community in Cardiff? In the small community in which he lived—containing some 18,000 inhabitants—until they obtained a pure supply from a deep well that entered the chalk the death-rate was up to 32 or 33 per thousand. The only objection to the well in question was that the water was hard, but since the supply had been used the death-rate had fallen to some 15 or 16 per thousand. Admirable sanitary arrangements supplemented the improved supply. The medical and scientific men in the neighbourhood attributed the enormous reduction in the death-rate—at once from 33 to 15 or 16—to the improved water-supply.

Mr. Hughes, replying, said the question of the action upon lead of the water proposed to be used in Cardiff had been considered at the time the Bill was before the Parliamentary Committee, but he had not gone into it himself. He thought it might be said that it was all right. The present water was never opalescent, and was always beautifully clear, giving no trouble whatever in that respect. The total hardness of the proposed supply was between 4 and 5 degrees, and its solid matter was between 6 and 8 parts per million. In regard to organic matter it was also very satisfactory. Its organic ammonia ran from ·05 to ·03 part per million. It was taken from perfectly uncultivated ground, in a bleak, mountainous district. He admitted the present supply to be small, and they were now trying to enlarge it. He understood that the Severn Tunnel water was very hard, it being impossible to reduce it below 20 degrees. That was permanent hardness. He quite agreed that it was very free from organic matter, but its hardness was against its use for the supply of a large community.

Mr. Schacht said he believed the degree of hardness was 17 before any effort at softening was made.

Mr. Hughes added that he entirely agreed with Mr. Atkins that the purity of a water-supply had a direct and immediate effect upon the general health of a populous community.

A vote of thanks for his paper was passed to Mr. Hughes, and a paper was then read on

THE ALKALOIDAL VALUE OF SOME COMMERCIAL HENBANES.

By A. W. Gerrard, F.C.S.

Referring to his paper, read at Leeds last year, on the "Alkaloidal Value of Annual and Biennial Henbanes," Mr. Gerrard said he then showed that both varieties were about equal in strength. At that time he had no intention of carrying the work any farther, but, soon after the publication of his note, he received a letter from Messrs. Evans, Lescher & Webb, saying, "We are sending you 4 lbs. of henbane leaves, which, we believe, is the foreign annual plant. It was obtained from Liepsic. We shall be glad to know the result of your examination of the same."

Subsequently, in reply to a note, the same firm forwarded a large sample of French henbane, with the remark, "This is collected in France, and is, we believe, what is there used for medicinal purposes." Mr. Gerrard determined to examine these henbanes and compare them, as to value, with ordinary commercial English varieties. Judging from appearances and other circumstances, the foreign kinds were, at the very least, two years old, so, to make the comparison as fair as possible, English samples of a not less age were obtained. Though no positive or exact information as to the age of any sample was forthcoming, he is confident that all had been collected two, and, possibly, some five or six years previously.

The general appearance of the German henbane was rough. It was composed chiefly of the annual plant, root, stem, fruit, and leaves being present in various stages of development. With it was mixed about one-fourth of its weight of first year's biennial leaves, in some cases with the root attached. A few grasses and some leaves of unknown plants were intermixed. Its odour was somewhat musty and narcotic, and its colour dull green.

The French henbane had a very fair appearance, was entirely the first year's biennial kind, consisting mainly of leaves, but here and there a root was found. Its colour was pale green, and odour hay-like, scarcely narcotic.

The English varieties used were the second year's biennial flowering tops, in flattish masses of flower and leaf, consisting of the helicoid cyme of the plant, collected before the fruit had formed, constituting the highest priced and most valued variety of the English drug. Likewise the first year's growth of biennial leaf. The former was the brighter sample and had the sweeter odour; the latter was darker and more narcotic in odour.

The process followed for the extraction of the alkaloid was exactly the same as that adopted in previous investigations described in the "Year-Book of Pharmacy," 1890, page 347. Briefly, it was as follows:—A proof-spirit extract was made from 1 kilogramme of the leaves, and the alkaloid removed by ammonia and chloroform. The chloroform residue of impure base was dissolved in pure ether, then shaken out from the latter by hydrochloric acid; again the base was shaken out from the hydrochlorides by ammonia and ether. Finally, the residue from the ether was estimated volumetrically with hydrochloric acid 1 c.c., being made equivalent to ·0289 gramme of base, which may be either atropine or hyoscyamine, as both have the same basic power. The following table shows the result of the examination:—

Whence obtained	Part used	Yield of base per 1,000
Germany	Entire annual herb	·295
France	First year's biennial leaves	·398
England	" " " "	·390
"	Second year's biennial tops	·451

These results show that the German article is of low quality, containing roundly one-fourth less alkaloid than the French or English leaves, and one-third less than the English tops. Looking at the rough character of the German sample, and the amount of stem present, the result is not contrary to expectations. Mr. Gerrard did not wish to create the impression that this is the kind of henbane commonly used in Germany, as the care he has seen exercised in that country over the selection and storage of herbs leads him to believe otherwise. The fact, however, remains that such henbane is sent to various parts of the world, and presumably manufactured into preparations the quality of which must be very low.

These experiments appear to show that a considerable falling-off in the alkaloidal value of the leaves takes place with age, for the fresh leaves examined last year gave an average yield of ·665 of base per 1,000, while the old leaves now examined only show an average of ·383 per 1,000. It is safe to say that such a large difference cannot be attributed to conditions of growth or locality, for two of the old low-quality samples were grown in this country, and one of them when fresh, three years ago, gave ·600 of base per 1,000; so it seems certain that deterioration takes place with age.

In conclusion, it is worthy of remark that a bright-coloured, well-preserved sample of henbane, whether of the annual or biennial kind, can with certainty be relied on for making good preparations, but old and dark coloured leaves, containing stalks and fruit, should be avoided. It is further gratifying to know that the quality of the English-grown drug is fully equal to that of foreign markets.

Mr. Moss opened the discussion. He said he had for some time examined henbane with a view to determine the alkaloidal value, and he had referred to Mr. Gerrard's work already mentioned. In following Mr. Gerrard's process he had met with one difficulty. When he came to shake out the alkaloid with ether a second time he found it was impossible, or almost impossible, to get away the whole of it. He not only shook it three times but thirteen times, and still could get alkaloid away. It was only a very small amount, but in the aggregate it might, perhaps, affect the results. He had also paid some attention to the foreign henbane. He obtained a German specimen better than that shown by Mr. Gerrard—greener, not so dry, and not at all musty. From that he obtained recently alkaloid corresponding to quite 0·4 per thousand, which was somewhat more than Mr. Gerrard stated that he found. He would be glad if Mr. Gerrard could give them a little more information relative to the difficulty he had met with, so that they might be sure about obtaining the whole of the alkaloid.

Dr. S. Rideal (St. George's Hospital) asked the author whether he could give any additional information as to the alkaloidal value of different parts of the plant. It appeared to him that in the German sample referred to, the low result was misleading unless one knew the relative quantity of leaf, root, and stem in the sample. He also hoped that the author would give the Conference a further note on the same samples next year, so as to give definite information as to the rate of alkaloidal loss with time.

Mr. Ransom thought the paper was a valuable supplement to Mr. Gerrard's paper of last year. He had experienced the same difficulty that Mr. Moss mentioned in the extraction of the alkaloid with ether. He had always found chloroform much more satisfactory: it took out more of the alkaloid, and the product was of greater purity.

Mr. J. S. Ward (Liverpool) had been somewhat anticipated in what he intended to say. He believed that last year Mr. Gerrard found the first and second year's leaves of the biennial plant to be about equal, and this year he found that the second year's leaves were much more active than those of the first year. He would like to ask, Had Mr. Gerrard examined portions of the same leaves he examined last year? Seeing that they were both apparently volatile and diminished in value with age, it certainly would be interesting to know whether they were still equal, or whether one lot had better keeping qualities than the other. He should also like to ask, with reference to the English varieties, whether the alkaloidal value bore any relation to the colour. It appeared to him that if they got the leaves nice and green the alkaloid would be considerably greater in amount than when the leaves were dark or brown in colour.

The President said the subject was one which Mr. Gerrard had paid much attention to, and therefore he must be considered an authority. He understood that he found the French and English varieties to be practically identical as far as their yield of alkaloid was concerned. This had been a luxurious year for the growth of henbane, and he had seen it growing in large quantities in the South of England.

Mr. Gerrard, in reply, said the object of his paper was to show things as they were: it was not within his power alone to make them as they ought to be. He would, if possible, have henbane always uniform in quality so that everybody might know what they were using—something of definite strength. In answer to Mr. Moss and Mr. Ransom, he stated that he first exhausted his extract with the minimum amount of chloroform: he did not start with ether. He was aware of the fact that chloroform was the best alkaloidal solvent, but it was not the best purifier. Perhaps one reason why Mr. Moss had not been able to remove quite the whole of his alkaloid was that ether sometimes contained traces of alcohol, and when such ether was shaken some of the alcohol and the ether itself mixed with the aqueous solution, and held back the alkaloid. His procedure was as follows: He shook the solution with ether and separated it three or four times, and there remained behind a tolerably weak alkaloidal solution; he then made his solution neutral with tartaric or citric acid, evaporated down to a small volume, treated afresh with ammonia, and gave it a final shake with ether. That process would take out anything that remained. Replying to Dr. Rideal's question, he stated that in his last paper the root was shown to be of considerably higher value than the leaf at any period of its growth. The value of the stem he had not entered into because it was not of any use in pharmacy.

Dr. Rideal asked, Could Mr. Gerrard estimate the quality of the alkaloid for the relative quantities of stem and root from direct observation?

Mr. Gerrard said it would be impossible. It depended very much on the age. He thought that a fresh specimen grown this year, and properly dried and worked, would probably yield base equal to ·39 per thousand instead of ·29. The low figures were due to the admixture of foreign leaves and the large amount of stem present. As to the falling off in value for age, it was the experience of every pharmacist that when there were grounds for believing that a drug had become old it would be at once rejected, and a new supply obtained. The colour of the crude drug was a guide, but not an absolute one. He might say that a fresh drug, when it had a good appearance would, as a rule, especially if it was a leaf, yield an active preparation.

The President then moved a vote of thanks to Mr. Gerrard for his paper, and it was followed by one on

The Constituents of Henbane Seed.

By F. Ransom, F.C.S.

Various statements have been made as to the alkaloidal value of henbane seed. It is usually supposed to be richer in alkaloid than any other part of the plant, and has been suggested for use for galenical preparations. With a view to ascertain the actual alkaloidal value, the author of this paper suggested the following process:—150 grammes of the finely powdered seed are percolated with methylated spirit until exhausted. The alcohol is then evaporated from the percolate at a low temperature, and on cooling the fixed oil separates from the residual extract. The oil is washed with water acidulated with hydrochloric acid and the extract dissolved by warming in similarly acidulated water. The washings are added to the solution, which is then rendered alkaline with ammonia and exhausted with chloroform. The separated chloroform solution is agitated with very dilute hydrochloric acid, which removes the alkaloid; the aqueous solution is rendered alkaline with ammonia, and finally exhausted with chloroform, which, if allowed to evaporate spontaneously, leaves a crystalline residue. This is shown to be pure alkaloid by solution in dilute acid, precipitation with iodine, washing the precipitate and dissolving it in solution of sodium hyposulphite, which, after the addition of ammonia, yields the alkaloid to chloroform. By this process the dried seed yielded ·058 per cent. of pure alkaloid.

The fixed oil, which is of an olive-brown colour, was present to the extent of 18·8 per cent. The amount of alkaloid found was less than that obtained by Gerrard from the leaves and roots, and it appears therefore that the seed is not to be recommended for galenical preparations. The seed operated upon was obtained from biennial plants grown at Hitchin.

The President said that the seed had one advantage over the leaf in respect to the fact that it kept better, the leaf losing its virtue with age, and becoming very inert. Seeds of all kinds generally retained their vitality for a long period, as was shown by the fact that some had been obtained preserved since Roman times, which germinated on being planted.

Mr. Gerrard asked Mr. Ransom if the seed which he employed was some commercial seed, or had it been selected. He himself had taken seeds from the fruit which were planted and never germinated, and simply because they had never ripened; and that, he believed, was the condition of henbane-seeds generally. For that reason he was inclined to think that the seed could not be considered a reliable drug.

Mr. Dott asked if the fixed oil had any solvent power upon the alkaloid, as it was his experience that it was troublesome to free oils from alkaloid associated with them in plants.

Mr. J. C. UMNEY stated on that point that the other day he had occasion to extract the alkaloid from stavesacre-seeds, and he found that the oil contained from 1½ to 2 per cent. of it. In reply to the President, he added that this was the case whether the oil was pressed from the seeds or extracted with the solvent.

The PRESIDENT, in reply to a question put to him by a member, said that the tradition regarding henbane-seeds being kiln-dried was perhaps raised by the growers, who did not want other people to grow their own henbane. He could say that the seeds were used in Germany in the manufacture of alkaloids.

Mr. RANSOM stated that he had noticed the odour of the oil from henbane-leaves, but not in that from the seeds. In his paper it was mentioned that the oil did dissolve the alkaloid, and special precautions were taken to free it from it.

This concluded the day's proceedings.

WEDNESDAY.

Rain was briskly falling at ten o'clock this morning, and a wet day seemed inevitable, although the morning had been bright and delightfully warm. When Mr. Martindale took the chair at 10.15 there were only 35 persons in the lecture theatre, and to these Mr. Hodgkin was called upon to read his paper. This was entitled

GLACIAL PHOSPHORIC ACID.

By JOHN HODGKIN, F.L.S., F.I.C., F.C.S.

A sample of glacial phosphoric acid was received from America, which was stated to be the quality usually sold in the special market whence it came [United States]; it was imported from Europe. On analysing it a large quantity of soda was found to be present; it was, therefore, a matter of some interest to examine a few samples, English and foreign, to see what was being sold.

Two English and two German samples were examined. For purposes of comparison a small batch of glacial phosphoric acid was made by the regulation method given in the text-books—namely, by calcining phosphate of ammonia. This was analysed, and the results of the analyses of the other samples were compared with it. The method devised for analysis of the free and combined metaphosphates was a new one, founded upon Thompson's observations on indicators, based upon the facts that dihydrosodic phosphate is neutral to methyl orange, but acid to phenolphthalein, and that hydrodisodic phosphate is neutral to the latter indicator. By this means we are enabled to estimate the *free* and *combined* phosphates. The sample of glacial acid, consisting chiefly of metaphosphates, is boiled, preferably with a known quantity of standard sulphuric acid, for about ten minutes, to convert the metaphosphate into orthophosphate. This is essential, since, though methyl orange reacts identically with metaphosphoric and orthophosphoric acids, with the former acid phenolphthalein gives no definite results. The sample is then titrated with normal soda solution, methyl orange being the indicator. The number of c.c. used after substracting the equivalent of the standard acid used for conversion into orthophosphate represents the *free* metaphosphoric acid—1 c.c. NaHO solution being equal to 0·08 HPO_3. The reaction is:—

$$H_3PO_4 + NaHO = NaH_2PO_4 + H_2O.$$

This same solution is then titrated afresh with normal soda solution, using 1 drop of alcoholic solution of phenolphthalein as an indicator. The number of c.c used represents the free and combined or total acids. To calculate results, substract twice the number of c.c. used in the methyl-orange determination, and the balance represents the original combined metaphosphate. The reason for subtracting twice the number of c.c. originally noted is that it takes twice the quantity of normal soda to form the salt Na_2HPO_4, which is neutral to phenolphthalein. The reaction is:—

$$H_3PO_4 + 2NaHO = Na_2HPO_4 + 2H_2O.$$

This is an accurate method, and was carefully checked by the uranium process.

Glacial Phosphoric Acid.

Sample	Origin	Form	Free HPO_3	Combined HPO_3	Equal to $-PO_3$	Total HPO_3	Total by Uranium	Total Base	Ammonium	Sodium	Equal to $Na_2H\,PO_4 + 12H_2O$.	Water	Silicia	Arsenic	Total
A ..	Made by ammonia process	Lump	48·00	43·52	42·98	91·52	91·84	8·05	8 05	None	—	Trace	0·54	Trace	99·57
B ..	English	,,	52·80	40·00	39 50	92·80	93·14	7·82	6 48	1·34	10 44	..	—	0·08	100 20
C ..	,,	,,	46·03	39 36	38·87	85·44	85 40	9·79	0 07	9·72	75·63	5·60	—	Trace	100·34
D ..	German	..	31·68	52·80	52·14	84·48	84 93	14·09	0 05	14·01	109·30	2·40	—	,,	100·31
E ..	,,	Sticks	36·48	47·36	46·77	83·84	83·70	13·49	0 06	13·43	104 48	3·25	—	,,	100·00
F ..	European*	Lump	42 21	37·89	37·41	80·10	80 41	10 20	None	10·20	79·30	10·10	—	,,	99·92
G ..	Experimental	,,	44 18	46·72	46·14	90·88	90 65	10·10	4·87	5 23	40·67	Trace	—	,,	100·40
H ..	Experimental from microcosmic salt	,,	None	—	—	—	78·12	22·50	—	22 50	—	—	—	—	99·7

* This is the sample referred to as sent from America, and being of European origin.

The sodium was estimated by Bettendorff's process (*Zeitschrift für Analytische Chemie*, 1888, p. 24), which consists in placing a few grammes of the glacial acid in a known quantity of fuming hydrochloric acid—sp. gr. 1·190—allowing to stand twenty-four hours, filtering through spongy platinum, washing with fuming acid, igniting and weighing, allowing for the solubility of the NaCl in the fuming acid (1 part NaCl = 1,348 parts HCl., 1·190). The ammonia was estimated by distilling with an excess of soda into decinormal acid, and titrating with methyl orange.

The result of the analysis of sample A—namely, that prepared by calcining phosphate of ammonia—showed that it is not possible to drive off all the ammonium, about 8 per cent. remaining. This requires a large percentage of metaphosphoric acid for neutralisation. The *free* acid is 48 per cent.; combined PO_3. 42·98 per cent. A small percentage of silica was found, which was contained in the phosphoric acid originally employed to make the phosphate of ammonia. Sample B, of English make, was the best in comparison, but contained soda, as well as ammonia; the free acid was 52 8 per cent. The sample contained appreciable quantities of arsenic. Sample C is also English, and contains large quantities of soda—in fact, every pound weight of this acid contained soda equal to ¾-lb. weight of hydrodisodic phosphate. D and E are both German samples, and contain soda equal to over 100 per cent. of phosphate. F is the American sample referred to, and somewhat resembles C in its composition. G is an experimental sample, made by deliberately adulterating phosphate of ammonia with phosphate of soda, and calcining. It contains, curiously enough, *ammonia*, whereas in sample H, made by calcining microcosmic salt, $H.NH_4NaPO_4$, all the ammonia has been expelled.

To sum up the results, the use of soda is discouraged, as it leads to extensive adulteration. A good article, hard enough for all purposes, can be made by adhering to the regulation ammonia method. There is no advantage in having a very hard preparation if the quality is to suffer so enormously.

The author, in concluding, advised pharmacists to use Bettendorff's test qualitatively; to unhesitatingly reject samples which show soda to be present; to insist upon the article being soda free, and with no other base than ammonia present; and, in order to ensure the percentage of free acid being kept up, to use the simple titration method with methyl orange for free acidity.

The PRESIDENT said they were much obliged for Mr. Hodgkin's interesting communication on this subject. They were glad to be able to have definite information as to what glacial phosphoric acid in commerce really consisted of. Mr. Hodgkin had pretty clearly pointed that out. He (the President) knew, from having witnessed a quantity being made at different times, if made from phosphate of ammonia it always contained more or less trace of ammonia, and that it was impossible to prepare it from pure phosphoric acid by concentration. Referring to the trace of iron, the treatment of phosphate of ammonia was generally carried on in platinum vessels, and it was not possible to keep it free from traces of iron. As to the presence of arsenic, he noticed traces were found in nearly every sample. He thought it was possible now to obtain phosphorus almost entirely free from arsenic.

Mr. HODGKIN said it was so, but all the samples shown did actually contain arsenic.

The PRESIDENT, continuing, said Mr. Hodgkin's paper would be of great service to buyers of the article, who wanted to know really what they were getting, and also for the mode of distinguishing and testing between that containing soda and that not containing soda.

Mr. THOMAS TYRER, on the invitation of the President, joined in the discussion. After complimenting Mr. Hodgkin, he said that his own experience was so recent that he could not be said to be an expert. But he had made some investigations into glacial phosphoric acid as an article in which he was commercially interested, and his conclusions in the main agreed with Mr. Hodgkin's, so that he accepted his position absolutely and completely. He thought pharmacists were indebted to the author of the paper for the manner in which he had shown them how they could easily test the purity of this chemical. As a manufacturer he might say that, while it was the bounden duty of manufacturers to supply the article asked for, this acid was on a footing with two cases referred to yesterday—viz., milk of sulphur and euonymin. To the latter manufacturers had to add a something, be it sulphate of barium or calcined magnesia, to preserve it in a condition fit for dispensing; and so in the case of glacial phosphoric acid they had to add to it, or ensure that a certain proportion of the foreign substance should remain in the finished product, if it were to be the glacial phosphoric acid of the technical or elegant appearance which the trade demanded. While elegant pharmacy was a desirable condition to aim at, it must not be allowed to override chemical purity; so people should not ask for phosphoric acid in a particular condition and expect to get it pure; and in regard to the glacial acid, he thought that manufacturers in this country should adopt one definite form for preparing it. It was perfectly clear that the publication of the paper and the discussion on it would put pharmacists in the right as to the use of the glacial acid, and the preference of the viscous variety. He was surprised to hear that arsenic was to be found in the acid—it was surprising to find anything where it was not wanted. (Laughter.) But he would point out that it was in traces only—traces in a highly-concentrated compound—and probably on dilution arsenic might not be found in the acid at all. Still it was there, and he could only say, as a manufacturer, that the best way to keep out the impurity was by not having impurities to begin with. After referring to the method of examination employed by Mr. Hodgkin, he, in conclusion, complimented him on the value of his paper. (Applause.)

Mr. A. H. ALLEN asked if Mr. Hodgkin had tested for and found any traces of platinum in the acid. He asked this because a few years ago he had treated glass with glacial phosphoric acid, and found it to dissolve the glass so freely that he tried it in platinum, which it also dissolved.

Mr. TYRER said, in regard to this matter, that his predecessors (Messrs. Dunn & Co.) had had some platinum vessels stolen from them, and they were afterwards detected from the traces of meta phosphoric and phosphoric acids which had been found adherent to the platinum.

Mr. ALLEN said when he used the expression "dissolved platinum" he did not mean dissolved with effervescence, as was usually understood by that term. (Laughter.)

Mr. HODGKIN, replying, said he did not test for platinum. He did not say it was not there, but they did not consider it necessary to test for it. With regard to Mr. Tyrer's remarks, it was quite clear that all glazes were attacked by concentrated phosphoric acid. Sometimes also a large amount of silica was found. Referring to sodium added for hardness, if they looked at sample B—a fairly hard sample, and good article—the sodium which it was necessary to add was only 1·34 per cent. If they could get such an article with such a small percentage it would be satisfactory; but where they came up to 13, 14, and 20 percentages, they really might take it that those were adulterated. Why he recommended pharmacists to condemn samples containing sodium was that, if they knew they had got sodium there, they might have anything from 1½ to 13 and 14 per cent. Really the moral of the thing was that glacial phosphoric acid ought not to be used at all. It was an antiquated form. He believed people still made Parrish's food by using phosphoric acid. (Laughter.) But it really ought to be relegated to the limbo of exploded notions; if used, however, people might just as well use the article which did not contain sodium. There were only traces of arsenic found, and, if they considered the concentration, it was not surprising that they did find traces of arsenic. (Applause.)

The PRESIDENT, in moving a vote of thanks for the paper, said he thought glacial phosphoric acid should be cast into the same limbo as calcareous milk of sulphur. (Applause.)

The next paper read was on

A METHOD OF STANDARDISING THE EXTRACTS OF NUX VOMICA AND OPIUM.

By MICHAEL CONROY, F.C.S.

Only the extracts of nux vomica and of opium are referred to in this note, because they are the only two solid extracts of the British Pharmacopœia that are made of a standard alkaloidal strength. As, however, the art of pharmacy is becoming daily more exact, it is quite possible that our next Pharmacopœia may contain several others, such as the extracts of belladonna, calabar bean, colchicum, henbane, and hemlock. It is, therefore, of great importance that some method be adopted whereby standardised extracts may be kept of a uniform consistence, instead of being more liquid or solid at one time than at another.

It is, I think, generally admitted that the present mode of standardising the extracts of nux vomica and opium is unsatisfactory. In the case of nux vomica, we are directed to estimate the total alkaloid in one fluid ounce of the percolate. Having ascertained this, we next take as much of the percolate as contains 131¼ grains of total alkaloid, and, by distillation and evaporation, reduce it to an exact weight of two ounces. This gives an extract, containing 15 per cent. of total alkaloid, which, as a rule, is far too thin for forming pills.

Another important consideration is that an extract of this thin consistence, under certain conditions of storage, is very prone to dry up, and so increasing in alkaloidal strength as to become a source of danger.

The difficulty that presents itself is that the yields of alkaloid and extractive matter are not always proportionate. One parcel of nux vomica may be rich in alkaloid and poor in extractive matter, in which case we are bound to have a thin extract by our present method, whilst another parcel may be poor in alkaloid and rich in extractive, the result being a more solid extract; but in no case have I met with nux vomica yielding a sufficiently solid extract when standardised to 15 per cent. of alkaloid. I quite recognise the difficulty of fixing an alkaloidal standard for this or for any other extract, and do not wish to infer that the standard has in this case been fixed too low. It is absolutely necessary in fixing a standard to be rather below than above the average, and in consideration of this I quite think that 15 per cent. total alkaloidal strength is a fair one for nux vomica extract.

In the case of extract of opium, the morphine strength of 20 per cent. is undoubtedly too low, the consequence being that the extract is always too soft if fine opium has been used. I do not overlook the fact that the official opium, when dried at 212° F. and powdered, should contain about 10 per cent. of morphine, or, as stated in the official language, that "100 parts of such dry powdered opium shall yield not less than 9·5 parts, and not more than 10·5 parts, of morphine." If genuine Asia Minor opium of this strength could be obtained—and bearing in mind that opium yields about 50 per cent. of extractive—there would be very little difficulty in producing a fairly good extract containing about 20 per cent. of alkaloid. Such, however, is not the case. It is practically impossible to obtain genuine Asia Minor opium—the kind directed by the Pharmacopœia—of this low alkaloidal strength. Good Asia Minor opium, when dried and powdered as directed, yields from 13 to 15 per cent. of morphine by the official test, and I speak from considerable practical experience in opium-assaying when I say that the standard of the dry powdered drug should be at least 12½ per cent., instead of 10 per cent. as now. Owing to the low standard fixed for this drug, all our official preparations of opium are 20 per cent. too weak, and our extract is not of a suitable consistence for forming pills.

Now, bearing in mind that extracts keep better and are much better adapted for pill-making—which, after all, is their chief use—when made of a good firm consistence, and seeing that it is necessary to take a low average alkaloidal standard, I would recommend the adoption of the following method, with the view of keeping them up to a uniformly firm consistence. Exhaust the drug as usual, but, instead of evaporating to a certain weight, evaporate until the extract is of a suitable pilular consistence. Then test the alkaloidal strength and make up to the correct standard by the addition of glucose.

Glucose, or starch sugar, is not at present used in pharmacy, but it is largely used in confectionery and in the manufacture of liqueurs and cordials. There are several commercial varieties, but the one referred to here is the kind known as liquid glucose. It is a colourless, sweetish, transparent, semi-solid body without any special tendency to become dry or to absorb moisture when exposed to atmospheric influences. Adding to these qualities, that it is quite innocuous, and that it blends well with these and other extracts with which I have experimented, I consider it a most suitable substance for the purpose. Samples of extracts standardised as described are on the table for inspection, together with a sample of the glucose used.

The PRESIDENT said there were certain difficulties in the subject which had been brought before them, and he would be glad to hear the remarks any members might have to make on it. It was of some importance, and required careful consideration, both from the pharmacist's and from the medical point of view, as well as from that of the public analyst.

Mr. DOTT said that, to get an extract of opium that would yield the official percentage of morphine, the usual method of reducing the extract was by the addition of dry marc or some substance which was inert. He thought Mr. Conroy's suggestion was a very good one.

Mr. SHORT said he quite agreed with Mr. Conroy that in a very large number of cases the extract of nux vomica, when reduced to the strength of 15 per cent. of alkaloid, was rather soft. The extract was of medium consistence at the B.P. alkaloidal strength, and if a higher strength was adopted it would make it very hard indeed. The only way out of the difficulty was to do something to the extract, so that it might be got of a good consistence, and he thought that this was obtainable by introducing a larger amount of the extractive matter. He was under the impression that there was a prejudice, or rather a strong feeling, against adding anything to the extract that was not contained in the drug itself. But he would say there could be no harm in the addition of anything like glucose, and they must bear in mind that the tincture had to be made from the extract; and they must use some substance that would be soluble in the liquid used in preparing the tincture. He thought glucose would be perfectly soluble in a liquid of the strength of 4 parts of spirit to 1 part of water.

Mr. J. C. UMNEY said it was desirable that they should introduce nothing that did not actually exist in the drug, and for that reason he had been accustomed to treat the marc with a weaker spirituous menstruum after the first extraction, so as to obtain extractive for dilution of the thin extract.

Mr. J. BARCLAY said what he had done with the extract of opium was first to exhaust with cold water and then exhaust with hot water, which took out a good deal of extractive. The first extract having been assayed, it was mixed with the extractive from the hot water, and so the strength was reduced.

Mr. GROSE said the paper was of great interest to retail chemists—he meant the pill-makers. (Laughter.) Nux vomica and opium extracts were ordered in very small quantities in pills, and when they were they could generally combine sugar of milk, or something of the kind, to stiffen the mass. But if they had to put 3 grains of extract of belladonna and 3 grains of extract of hyoscyamus in a pill they had then to add a considerable amount of dry powder. Retail pharmacists were too often obliged to deal with wholesale houses instead of making their own extracts, and in this they were, no doubt, much to blame. Many of the extracts sent were far from being of the right consistency.

The PRESIDENT: Send them back. (Laughter.)

Mr. MOSS said he had been in the habit of making nux-vomica extract. With regard to the opium, of course, in making it a little at a time there was difficulty in getting any single specimen which would give an extract of the right strength. But, by adjusting the proportions of a good opium which was rich in extractive—such as what was known as the Malatia opium—along with another which came from certain parts of Asia Minor which did not yield so much extractive, and was also poor in morphia, they obtained, by assaying their opium beforehand, a mixture which allowed them to make an extract which would be in keeping with the requirements of the Pharmacopœia. Of all the things proposed, glucose appeared to be the least objectionable for adjusting the consistency of the extracts. It was a thing so very much of the nature of what they found in the drugs from which the extracts were prepared that it appeared to be almost the natural article.

Mr. S. M. BURROUGHS thought that, instead of adding foreign matters to the extracts, it would be desirable to raise the standard of the alkaloidal principle. (Hear, hear.)

Mr. ALFRED SOUTHALL agreed with that remark. They wanted to harden the extracts rather than soften them, and he objected to the use of glucose or anything of that kind at all.

The PRESIDENT said that, at one time, when opium was high in price, the standard of the Pharmacopœia was doubtless correct; but now that the drug was cheap, 10 per cent. was a somewhat low standard. As to the suggestion of Mr. Conroy regarding the dilution of the extract with glucose, he did not quite agree, for the extract so made was not of the proper consistency for making pills, which was what this preparation was much used for. Sugar of milk was a better diluent for that purpose. His objection to the use of hot water in the preparation of extract of opium was that the narcotine and similar deleterious constituents of the drug were dissolved out. This was not the case when cold water was used. He thought that Mr. Umney's suggestion regarding extract of nux vomica, to get out more extractive by treating the marc with weaker spirit, was very good. He was also sure that the meeting was greatly indebted to Mr. Conroy for his paper.

Mr. CONROY, in reply, stated that he had tried Mr. Umney's suggestion to dilute the extract with extractive matter, but it was not satisfactory. He supported what the President had said regarding extract of opium: the use of hot water was very objectionable.

The Conference then passed on to the next paper, which was entitled

SUGGESTIONS FOR THE ASSAY OF ACONITE AND ITS PREPARATIONS.

By ALFRED H. ALLEN, F.I.C., F.C.S.

The importance attaching to the assay and standardising of preparations of aconite is universally admitted, but the exceptional difficulties connected with the problem have hitherto prevented any satisfactory solution. That these difficulties are very great is unquestionable, and my proposals must be regarded rather in the light of suggestions which may assist other workers in solving the problem than as a claim to have succeeded in its solution.

The extraction of the total alkaloids from aconite root can be effected with tolerable ease, and by the use of judiciously chosen methods they can be isolated fairly pure, and without having undergone any material change. The recent paper by Messrs. Farr and Wright (*Pharm. Jour* [3] xxi. 1,037) is a valuable contribution to this part of the subject, but, as is fully recognised by these chemists, the determination of the total alkaloids of an aconite preparation is, in itself, of limited value as a criterion of its activity. It is rather the first step in the process of assay, the potency of the preparation substantially depending on the results subsequently obtained.

Where the amount of material is sufficient there is no doubt that it is very desirable to isolate the crystallisable alkaloid, and, if this could be effected with an approach to quantitative accuracy, it would probably furnish the most reliable criterion of the physiological activity of the substance. In practice, however, very great difficulties attend such a method of examination. In the first place, there is always a danger that the maximum yield of crystals may not be obtained, and hence that the activity of the preparation will be seriously under-estimated. But, apart from this source of error, there exists the grave difficulty that the amount of substance which is commonly available, or can be conveniently submitted to examination, yields a quantity of total alkaloids far too small to render any method based on crystallisation practically available.

Under these circumstances, I have, with the assistance of Mr. G. E. Scott Smith, recently made some experiments to ascertain how far a method based on the saponification of the crystallisable alkaloids could be applied to the very small quantities of material isolated in an ordinary assay. That the saponification occurs with a near approach to quantitative accuracy was clearly established by Mr. C. R. Alder Wright, who also proposed to apply the reaction to the actual assay of aconite alkaloids. Hence I have thought it unnecessary to repeat Mr. Wright's classical experiments, and have sought rather to adapt his researches to the particular object in question—namely, the examination of very small quantities of aconite alkaloids.

The following table represents the composition of the three principal saponifiable alkaloids of aconite, and shows the products of their saponification. The table is substantially founded on the researches of Mr. C. R. Alder Wright, but the number of atoms of hydrogen in the formulæ of aconitine and aconine has been increased in each case by two, in accordance with the recent researches of Dunstan and Ince, though it is still an open question whether their formulæ or those of Wright express the true composition of the alkaloids in question.

Crystallisable Alkaloid		Products of Saponification					
		Acid Product				Basic Product	
Name	Formula	Name	Formula	Yield	NaHO required	Nature	Formula
Aconitine (from *A. Napellus*)	$C_{33}H_{45}NO_{12}$	Benzoic acid	$C_7H_6O_2$	18·92	6·20	Aconite	$C_{26}H_{41}NO_{11}$
Japaconitine (from *A. Fischeri*, &c.)	$C_{66}H_{88}N_2O_{21}$	„ „	$C_7H_6O_2$	19·60	6·43	Japaconine	$C_{26}H_{41}NO_{10}$
Pseudaconitine (from *A. Ferox*)	$C_{36}H_{49}NO_{12}$	Veratric „ (Dimethyl protocatechuic acid)	$C_9H_{10}O_4$	23·49	5·82	Pseudaconine	$C_{27}H_{41}NO_{11}$

A method of assay based on the saponification of the crystallisable alkaloids has the great merit of distinguishing sharply between the three principal poisonous aconite bases, on the one hand, and the comparatively inactive products of their decomposition on the other. In fact, as it is generally accepted that aconine has only $\frac{1}{300}$ of the physiological activity of aconitine, and that japaconine and pseudaconine bear a similar relation to their respective parent alkaloids, it may be safely assumed that the activity of a mixture of aconite alkaloids is substantially represented by the proportion of saponifiable base present, and, therefore, if the latter can be ascertained with an approach to quantitative accuracy, a considerable advance will have been made towards the solution of the problem of the assay of aconite preparations.

As already stated, Mr. C. R. Alder Wright's researches long ago established the quantitative accuracy with which the saponification of the aconite bases occurred. Thus the reaction of aconitine with caustic soda is expressed as follows:—

$$\underset{\text{Aconitine}}{C_{33}H_{45}NO_{12}} + \underset{\text{Soda}}{NaHO} = \underset{\text{Aconine}}{C_{26}H_{41}NO_{11}} + \underset{\text{Sodium benzoate}}{NaC_7H_5O_2}$$

The saponification of japaconitine and pseudaconitine may be expressed by similar equations, bearing in mind that the former alkaloid reacts with 2NaHO, with the formation of two molecules of sodium benzoate and two of aconine.

Wright's saponification experiments were made on comparatively larger quantities of alkaloids, but to be of practical value the method of assay must be available with a quantity of aconite bases not exceeding 50 milligrammes,* and should even be applicable with half that quantity, or less than four-tenths of a grain. I may fairly claim to have achieved a certain amount of success in dealing with these small quantities, a success which is in great measure due to the use of two most valuable reagents, neither of which had come into use at the period of Mr. Wright's researches. I refer to methyl-orange and phenolphthalein, the value of which as indicators is even now far from being fully recognised. Methyl-orange is sensitive only to the strongest acids, but reacts with the weakest bases. Hence all the ordinary alkaloids may be titrated with accuracy by its aid. Phenolphthalein, on the other hand, is sensitive to the weakest acids, but is quite unacted on by the majority of the alkaloids, atropine, homatropine, and hyoscyamine being the most notable exceptions. Sulphate of quinine, hydrochloride of morphine, and hydrochloride of aniline are perfectly neutral to methyl-orange, but react with phenolphthalein just as if the acids were in a free state. As phenolphthalein is sensitive to carbonic acid, no sharp results can be obtained unless the standard alkali used in titrating be quite free from carbonate. This is ensured by employing baryta-water as the standard alkaline solution, and experience has convinced me that this reagent is at least twice as sensitive as the most carefully prepared caustic soda. Either hydrochloric or sulphuric acid is suitable as the standard acid; oxalic acid does not react well with methyl-orange. As very minute quantities of acid and alkali are in question, I have found it necessary to employ very dilute standard solutions. The water used for diluting them must be recently boiled and rigidly neutral in reaction. The standard solutions we have adopted are of $\frac{1}{50}$ normal strength. Thus, the hydrochloric acid contains $\frac{36\cdot5}{50}$ grammes of HCl per litre, and the baryta $\frac{171}{\cdot2 \times 50}$ grammes of BaH_2O_2 per litre.

Omitting any description of some preliminary experiments, the process which we have found most successful for the analysis of small quantities of the aconite alkaloids is as follows:—A weight of 30 milligrammes of pure crystallised alkaloid, or about twice that quantity of the mixed alkaloids, from aconite is dissolved in about 15 c.c. of neutral ether, and the solution placed in a small stoppered cylinder, together with 3 c.c. of water containing a drop of a $\frac{1}{10}$-per-cent. solution of methyl-orange, and previously rendered sensibly pink by a minute addition of acid.

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* When such small quantities are in question the gramme is inconveniently large as a unit of weight, and hence throughout the paper the results are expressed in milligrammes.

Standard hydrochloric or sulphuric acid of $\frac{1}{50}$ normal strength ($\frac{36.5}{50}$ of HCl or $\frac{49}{50}$ gramme of H_2SO_4 per litre) is then carefully added from an accurately-divided burette, with vigorous agitation between each addition. The addition of acid is continued until the lower aqueous layer retains a red tint after thorough agitation with the ethereal layer. Operating in this manner the reaction is extremely delicate, for the brownish colour exhibited by the ethereal layer when an impure alkaloid is titrated in no way interferes, but presents a marked contrast to the colours of the aqueous liquid. The following factors may be used for calculating the amount of acid used to its equivalent of alkaloid.

1 c.c. of $\frac{N}{50}$ acid	neutralises	12·94	milligrammes of	aconitine
„	„	10·83	„	aconine
„	„	14·14	„	pseudaconitine
„	„	10·46	„	pseudaconite
„	„	12·44	„	japaconitine
„	„	10·54	„	japaconine

These figures are, of course, mere calculations, but it is worthy of note that by actual experiment 30 milligrammes of japaconitine was found to neutralise 2·40 c.c. of $\frac{N}{50}$ acid, which, according to the ratio $HCl{\cdot}C_{66}H_{88}N_2O_{21} = 36{\cdot}5 : 1244$ would be equivalent to 59·7 milligrammes of alkaloid. A reference to Mr. C. R. A. Wright's paper at this point showed that japaconitine hydrobromide had the formula $C_{66}H_{88}N_2O_{21}2HBr$, and hence that the alkaloid represented by the acid used would be only one-half the weight previously assumed. This corrected calculation gave a figure closely agreeing with the weight of aconitine taken.

The aqueous liquid containing the neutralised alkaloid was then separated from the ethereal layer (retaining the colouring matter), and treated with 20 c.c. of rectified spirit (neutral to phenolphthaleïn) and 3 c.c. of a solution of caustic soda in an equal weight of water. The liquid was then boiled for an hour in a flask under a reflux condenser, after which the alcohol was distilled off and the residual liquid acidulated with hydrochloric acid. The liberated benzoic acid was extracted by agitation, with about 15 c.c. of ether, and the ethereal solution separated and washed with successive small quantities of water, until the washings showed their freedom from mineral acid by ceasing to redden litmus.

The ethereal liquid was then separated and transferred to a small cylinder (25 c.c. capacity), about 5 c.c. of water faintly coloured with phenolphthaleïn added, and a $\frac{1}{50}$ normal baryta water added till the aqueous layer acquired a pink colour which was not destroyed by agitation with the ethereal stratum.

From the measure of standard alkali consumed the amount of aromatic acid resulting from the saponification was calculated—1 c.c. of $\frac{N}{50}$ baryta neutralises 2·44 milligrammes of benzoic or 3·64 milligrames of veratric acid. Although these acids have different combining weights, the volumes of alkali neutralised by equivalent proportions of them are, of course, identical, and hence no grave difference results in calculating the saponifiable alkaloid, whether benzoic or veratric acid has been produced by the saponification. Thus—

1 c.c. $\frac{N}{50}$ baryta	represents	12·94	milligrammes of	aconitine	saponified
„ „ „	„	14·14	„	pseudaconitine	„
„ „ „	„	12·44	„	japaconitine	„

In some cases we have endeavoured to estimate the basic product of the saponification, but with less success than has attended the determination of small quantities of benzoic and veratric acids. The acid liquid from which the aromatic acid has been extracted by agitation with ether has been rendered alkaline by potassium bicarbonate, and shaken with ether. Aconitine is said to be practically insoluble in ether under such circumstances, but, as a matter of fact, we have always obtained a considerable quantity in that manner, and a very trifling additional quantity on subsequently agitating the liquid with chloroform. But there is reason to believe that aconine is not extracted perfectly by either of these solvents from a liquid rendered alkaline by potassium or sodium bicarbonate. It is probable that a more complete extraction might be effected by the use of caustic alkali. Pseudaconine is said to be readily soluble in ether, and conformably with this statement a full weight of the basic product, by the saponification of crude pseudaconitine was obtained.

The following figures (Table A) show the results obtained on applying the foregoing process to samples of pure aconitine and japaconitine, kindly supplied to me by Mr. F. Ashley Rogers. The results from aconitine were not obtained by the analysis of three different samples, but represent the figures yielded by three separate analyses of the same sample of alkaloid, and hence show the variations to be expected with careful manipulation:—

Table A.

	Crystallised aconitine from *A. Napellus*			Japaconitine, not quite pure
	1	2	3	
Weight taken in milligrammes	30·0	30·0	30·0	30·0
$\frac{N}{50}$ acid for neutralisation ..	—	2·31	2·40	2·40
= Aconitine..	—	29·9	31·0	29·8 Japaconitine
$\frac{N}{50}$ baryta for neutralising acid ..	2·45	2·19	2·39	2·30
= Benzoic acid	5·9	5·3	5·8	5·6
= Aconitine	31·6	28·3	30·9	28·5 Japaconitine
Basic product extracted by ether	—	—	20·5	—
„ „ „ subsequently by chloroform.. ..	—	—	0·0	—

So far I have not had the opportunity of examining pure pseudaconitine by the same process, but the mixed alkaloids extracted by ether from a tincture of aconite kindly furnished me by Mr. R. A. Cripps, and prepared by him from roots of *Aconitum ferox* supplied by Messrs. Horner & Co., have yielded the following results:—Alkaloid taken, 76·7 milligrammes; by titration, 74·9 of alkaloid, calculated as pseudaconitine. Saponified it required 3·90 c.c. of $\frac{N}{50}$ baryta, corresponding to 14·3 milligrammes of veratric acid, the weight actually extracted by ether being 13 milligrammes. The baryta used represents 55·1 of pseudaconitine, leaving 21·6 of unsaponifiable alkaloid (pseudaconine). The basic product of saponification extractable by ether amounted to 16·5 milligrammes, an additional 2·0 being extractable by chloroform. These residues required 4·91 c.c. of $\frac{N}{50}$ acid, corresponding to 51·4 of pseudaconine, or 69·4 of pseudaconitine.

The foregoing experiments having indicated that the process in question was capable of affording very fair results, considering the very small quantity and the high combining weight of the substance employed, we examined by the same method some specimens of mixed aconite alkaloids extracted from the root by Messrs. Farr & Wright, and kindly sent me by the latter gentleman. The results are given in Table B.

These results are somewhat erratic so far as the basic products of saponification are concerned, probably in part owing to incomplete extraction and in part because of the further change. Aconine is known to suffer when heated with caustic alkali. But as the proportion of saponifiable or active alkaloid is deduced from the acid product, and this can be determined with facility and great accuracy, the immediate object of the research may be said to have been effected.

How far the japaconitine and pseudaconitine may be considered equivalent to aconitine in physiological activity I do not intend to discuss, but may say that the balance of evidence seems to show that the three alkaloids are approximately equally active when in a pure crystallised and unchanged state.

So far, I have regarded aconitine, japaconitine, and pseudaconitine as practically the only alkaloids concerned in the physiological activity of preparations of aconite. I believe I am justified in this view, and that I might even have omitted pseudaconitine from consideration without materially affecting the practical bearing of the question. But I have no doubt it has been in the minds of some present that these three alkaloids are not the only saponifiable bases of the aconites. Thus *lyaconitine*, the amorphous alkaloid of *Aconitum lycoctonum*, also yields an acid and one or more bases on saponification (of which one, lycoctonine, readily crystallises), but it is doubtful if the reaction can be expressed by any simple formula. *Picraconitine* was isolated by Mr. T. B. Groves from a parcel purchased in 1874 as roots of *Aconitum Napellus* of German growth ("Year Book," 1874, p. 510.) It is an amorphous bitter non poisonous alkaloid, forming a crystallisable hydrochloride and nitrate, and was found by Mr. C. R. A. Wright to yield benzoic acid and a basic principle on saponification. Although picraconitine is well characterised, it does not appear ever to have been met with again, unless the imperfectly-examined bitter alkaloid obtained by E. L. Cleaver from the root of *Aconitum paniculatum* was identical therewith. At any rate, in the absence of further evidence of its occurrence, we may regard picraconitine as too rare a base to require consideration in devising a process for the assay of aconite. Besides, its unrecognised presence in a preparation would merely result in the saponification-test indicating a greater proportion of physiologically active alkaloid than actually existed, so that the error would be on the right side.

Table B.

	A	B	C	D	E	F
Weight taken in milligrammes ..	55·0	61·7	26·0	87·0	21·0	31·5
Aconitine by titration	67·0	66·7	29·4	53·5	28·0	—
Benzoic acid ..	5·2	4·0		8·4	—	4·8
= Aconitine	21·7	20·4	—	44·5	—	25·7
Basic product by ether ..	38·0	—	—	—	—	—
Basic product by chloroform	2·0	—	—	—	—	—
Basic product by KHO and chloroform	4·0	—	—	—	—	—
Basic product, total weighed	44·0	—	—	—	—	—
Basic product titrated	48·3	—	—	—	—	—
Basic product = aconitine ..	58·2	—	—	—	—	—
Percentage of saponifiable alkaloids	50·4	33·5	—	51·1	—	81·6

Although it is a fair presumption that the physiological activity of a specimen of mixed aconite alkaloids may be gauged by the proportion of saponifiable base contained in it, there is some reason to doubt whether all specimens of pure crystallised aconitine from *Aconitum Napellus* have even approximately the same toxicity, to say nothing of possible differences in strength between these preparations and japaconite or pseudaconitine.

The first doubt on this point seems to have been raised at the Birmingham meeting of the Conference, when the late Mr. John Williams, in a paper on "crystallised aconitine," stated that aconitine prepared by precipitating a solution of the nitrate by a large excess of nitric acid, in the manner proposed by Alder Wright, did not crystallise in the same well-defined and perfect forms as the original alkaloid. Mr. Williams's experience has since been confirmed by his nephew, the late Mr. Edwin Richards, who, in a paper written jointly with Mr. F. Ashley Rogers (THE CHEMIST AND DRUGGIST, February 7 and 14, 1891), states that further practice enabled them to effect the crystallisation of the alkaloid recovered from the nitrate; but they regarded it as permanently changed in its nature. The recovered alkaloid they call beta-aconitine, and attribute to it the melting-point 178°–180° C., as compared with 182°–184° (uncorrected), observed by them as the melting-point of the original crystallised alkaloid. Messrs. Richards and Rogers further attribute to the beta-aconite, or alkaloid recovered from the nitrate, a toxicity very materially greater than that of the original crystal alkaloid, called by them alpha-aconitine.

At first sight it appears highly improbable that the mere conversion of aconitine into the nitrate and its recovery from that salt can have any notable effect on its crystalline habit, melting-point, or toxicity. But the process in question does not merely consist in forming the nitrate and crystallising that salt. It involves the solution of the alkaloid in dilute nitric acid, and the precipitation of the nitrate from that solution by addition of an excess of moderately strong nitric acid, in which the salt is insoluble. But Alder Wright has pointed out that the aconite alkaloids, when treated with excess of dilute mineral acid, are very liable to lose the elements of water, with formation of the corresponding *apo-* or *anhydro-bases*. This occurs so readily with pseudaconitine, that Wright was at first misled as to the formula of the alkaloid, owing to the substance analysed containing a considerable proportion of anhydro-pseudaconitine. He further states ("Year Book," 1878, page 488) that: "In consequence of this ready dehydration it is difficult to isolate aconitine from *A. Napellus* roots, as the crystallised base is apt to be mixed with apo-aconitine which closely resembles the parent alkaloid. The hydrobromide of apo-aconitine, however, appears to be more soluble in water than that of aconitine, so that by converting the mixture of bases into hydrobromides, crystallising, and regenerating the alkaloid from the crystals, pure aconitine is obtained, the apo-aconitine remaining in the mother-liquors."

Apo aconitine is stated by Wright to melt one or two degrees below the parent alkaloid, and to be obtained by the evaporation of its ethereal solution in small colourless crystals, which adhere and stick to the sides of the glass vessel in a characteristic manner. In physiological activity it appears to be "not inferior" to the parent alkaloid. It appears highly probable, therefore, that commercial crystallised aconitine and the nitrate sometimes contain considerable admixtures of apo- or anhydro-aconitine, and that this fact is the true explanation of the alteration in crystalline habit and melting-point observed by Richards and Rogers. But if the physiological activity is largely increased by the dehydration, it is eminently important to abandon any process of purification which involves such a change, or which does not include the elimination of the altered alkaloid. The statement of Richards and Rogers that a very large increase in the toxic activity of crystallised aconitine is produced by the nitric-acid treatment requires the support of confirmatory testimony before it can be positively accepted as correct; but it is at least eminently suggestive, and if confirmed will go far to explain the conflicting and perplexing statements of various observers as to the relative potency of the several brands of commercial aconitine.

Mr. Allen, instead of reading his paper, gave a summary of it, which included a demonstration of the method of titrating the ethereal solution of the alkaloid saturated with excess of acid, the excess being brought back to neutrality with standard alkali, phenolphthalein being used as an indicator.

The PRESIDENT, in inviting discussion, said that the method of estimating the aconitine was very ingenious, and might be made useful as a means of testing alkaloids.

Mr. J. C. UMNEY remarked that the process of saponifying the alkaloidal residue from *Aconitum Napellus* by alkali, separating the benzoic acid, and titrating was perfectly incorrect, because the aconitine was associated with a gummy base (originally mentioned by the late John Williams, and afterwards found and described by Jörgens). This gummy base also yielded benzoic acid when saponified by alkali or by hydrochloric acid. As aconite root contained about ·07 per cent. of aconitine, and ·02 to ·03 per cent. of the gummy base, it followed that an error would arise. In fact, while aconitine yielded 16 per cent. of benzoic acid, 22 per cent. was obtained from the amorphous body. He felt that he could speak on this matter because for the last ten months he had been working on the subject in conjunction with Professor Dunstan, and, although he was not at liberty to state what results they had arrived at, still he could say that he had been able to corroborate Jörgens's conclusions regarding the saponification of the gummy base by acids and alkalies. He estimated the amount of error which would thus creep into Mr. Allen's process at 50 per cent.

Mr. ALLEN: Will you explain that?

Mr. UMNEY restated what is reported, and added, regarding Mr. Allen's statement as to aconine being soluble, and not insoluble, in ether, that the alkaloid is insoluble in anhydrous ether. Probably Mr. Allen's ether contained alcohol. He could inform the meeting that the amorphous base which he had spoken of was a perfectly inert body, and he had taken a grain of it without doing himself any harm.

Mr. F. W. SHORT, referring to Mr. Allen's remarks on the behaviour of alkaloids to phenolphthalein, said there was a great number which were inert towards that indicator, but the mydriatic alkaloids were the opposite. So was morphine, which even reacts acid with it. This was owing to the hydroxyl group in the base, and, until they replaced the hydrogen atom of the hydroxyl with a base, it remained acid.

Mr. DOTT asked if Mr. Allen did not find that baryta solution altered by absorption of carbonic acid. He also thought that an error might creep in through the use of rectified spirit, unless the precaution were taken to neutralise the free acid in it. He supposed that Mr. Allen had done that.

Dr. RIDEAL said that the meeting ought, at any-rate, to congratulate Mr. Allen on the cheap burette-clip which he had shown them. (Hear, hear.)

The PRESIDENT said thanks were due to Mr. Allen for his interesting and suggestive paper. It would probably lead to some plan of standardisation of those potent pharmaceutical preparations which, he was afraid, were very indefinite as met with in commerce.

Mr. ALLEN, in reply, said he would ask Mr. Dott to kindly repeat his question, as he was under the misfortune of not having been able to catch it.

Mr. DOTT said he asked if the spirit which was used contained any free acid, and was it allowed for in the estimation; and did not Mr. Allen find that the baryta solution was rather apt to change, owing to the absorption of carbonic-acid gas.

Mr. ALLEN said, in the first place, the spirit of commerce was distinctly acid, and would require the addition of several drops of alkali to make it neutral. He was careful to employ proper reagents in his experiments. He had not the slightest doubt whatever that phenolphthalein indicated with the greatest accuracy; he had every confidence in it. As to methyl-orange, there were such things as good and bad methyl-orange. He personally had had no difficulty with it, and he had used it as an indicator with the greatest satisfaction. As to baryta water, of course that was liable to change. But it was much better to have a solution which changed, and showed that it did so, than to have on which was bad, like caustic soda. (Hear, hear.) Baryta water should be kept in a special apparatus, into which no carbonic acid should be allowed to enter. A far more serious difficulty was commented upon by Mr. J. C. Umney, who asserted, if he heard him aright, that the whole process suggested was absolutely valueless in the case of *Aconitum Napellus*, because, first of all, there was a gummy base found by Groves.

Mr. J. C. UMNEY: Not by Groves. The picro-aconitine was the base found by Groves—it had never been found by anyone else, and by him on only one occasion. The other was a gummy base found by Williams, and afterwards by Jörgens and Wright; it was also found by Professor Dunstan, and referred to by him in a paper recently read before the Chemical Society in London.

Mr. ALLEN said he rather misunderstood Mr. Umney's observation. They agreed, however, on the point that Mr. Grove's base of picro-aconitine had never been found again. On the other hand, there was the gummy base of Williams, Jörgens, and Wright, which had been afterwards investigated by Messrs. Dunstan and Ince. When they came to a gummy base which was not named in analysis, they generally put it down in the category of mixtures, which the next investigator generally proved to be of an indefinite character. He protested against a suggestion that a process for the estimation of aconitine should be condemned simply because certain unpublished observations had been made, which no doubt when they saw the light would be found to be valueless. He looked forward with the greatest anxiety and interest to the future publication of those experiments, because they did not know about anything like the whole of the aconite extractives. When one had got a substance which would not crystallise, one had a little doubt about exhibiting it as a chemical individual. If there had been isolated another gummy base with at least as much or more benzoic acid——

Mr. J. C. UMNEY (interrupting) said his statement was not based on his own unpublished work, but on that of previous workers which had been already published.

Mr. ALLEN, continuing, said he should be glad to see the publication of the papers in an available form. The suggestions he had made were applicable to other alkaloids as well as the alkaloid of aconite. It seemed strange to him that the Pharmacopœia should advise the use of German root, as if English root was unobtainable. This seemed to him an anomaly which ought to be put an end to.

The PRESIDENT stated, with reference to the work of Professor Dunstan and his colleagues, that he believed the matter was under further consideration. He believed the paper read before the Chemical Society really was a preliminary one, to which additions would be made as the work was completed. He looked forward with great interest to this important subject being settled. Even medical authorities had reproached pharmacists, asserting that they were supplying an article under the name of aconitine which they dare not use in medicine. There was very little doubt that, after what they had got from *Aconitum Napellus*, the further investigation of the other by-products would no doubt be looked forward to with great interest. They were much obliged to Mr. Allen—(loud applause)—for the simple process of estimating the alkaloid which was probably the most active one present in *Aconitum Napellus* root and its preparations.

Mr. DAVIES then read

SOME NOTES ON OIL OF EUCALYTUS AND EUCALYPTOL.

By ROBERT H. DAVIES, F.I.C., F.C.S., and
THOS. H. PEARMAIN.

The authors of this paper had more or less completely examined some twenty-four samples of eucalyptus oil, of which twenty-one were articles of commerce, the remaining three being museum specimens. In eleven cases the botanical and geographical sources were ascertained; the rest of the samples were obtained through the ordinary commercial channels.

The points to which attention was given were:—Specific gravity, specific rotatory power, solubility of salicylic acid, solubility in rectified spirit, action of nitrous acid, acidity calculated as acetic acid, and iodine-absorption equivalent.

The methods of employing the tests were the usual ones, excepting that a more exact estimation of the amount of salicylic acid that was dissolved by each oil was obtained by volumetric estimation with alkali, after adding spirit to a weighed quantity of the solution of acid in oil.

The general results obtained were strictly in accordance with those of MacEwan, Squire, and others as to the existence of two distinct classes of commercial eucalyptus oils. For brevity these were called the "heavy" class and the "light" class, and a *résumé* of the results is given in the first table.

The authors concluded from their experiments that the oil of *Eucalyptus amygdalina* was the only commercial oil that contained phellandrene, so that the nitrous-acid test (addition of sodium nitrite to solution of the oil in glacial acetic acid, when a solid nitrite is formed if phellandrene be present) would serve to distinguish this oil from that of any other species. Moreover, the low sp. gr. would confirm this conclusion.

Failing to find much in the literature of the subject as to the medicinal value of the various constituents of eucalyptus oil, and noting that eucalyptol, now identified with cineol and cajuputol, was pretty generally credited with the virtues ascribed to the oils, the authors concluded to endeavour some rough estimation of the amount of eucalyptol contained in the oils of which they knew the botanical sources. Eucalyptol boils at 176° C. to 177° C., has no optical activity, and solidifies when cooled in a freezing-mixture.

They distilled 50 c.c. of each of seven oils, and the amount of the fractions coming over from 170° to 175 and 175 to 180° are given in the second table on this page.

The larger proportion of the fraction, from *E. oleosa*, coupled with the fact that it possessed the smallest rotation, induced them to select this oil for the more careful fractionation of a larger quantity.

Of this oil 500 c.c. were distilled, and after refractionating 236 grammes were collected, boiling between 174° and 177° C., which, when cooled to −10° C. in a mixture of ice and salt, crystallised abundantly, and they succeeded in separating 120 grammes of crystals. This they regarded as crude eucalyptol, and did not further purify. It had a rotation of 1·46° to the left in the 100-m.m. tube, and a sp. gr. at 60° F. of ·9190.

This sample was compared with eight samples of eucalyptol procured commercially.

The properties of pure cineol, or eucalyptol, are, according to Schimmel: sp. gr., ·930; rotation, nil; freezing at −1° C. Other observers differ from Schimmel as to the sp. gr., Jahn stating ·924. One specimen purchased, called "pure eucalyptol," gave no rotation, and on cooling solidified to a firm, hard mass. The remaining samples all rotated polarised light, the samples made by the authors having the least rotation. The remainder varied in their rotatory power, the highest being −32° for the 100-m.m. tube. This sample the authors consider to be from *Eucalyptus amygdalina*, a conclusion confirmed by the fact that it gave a solid nitrite, due to phellandrene. Of the whole nine samples, four remained liquid when cooled to −14° C., one gave a few crystals, three became fairly solid, and one gave a hard, firm mass. The iodine-absorption equivalents of these were also determined, and from them the authors conclude that pure eucalyptol does not absorb iodine.

	Specific Gravity	Specific Rotation	Solubility of Salicylic Acid	Phellandrene Reaction	Solubility in Rectified Spirit	Acidity as Acetic Acid	Iodine Absorption per cent.
			Acid Oil		Oil Spirit	Per cent.	
Average of all the samples ..	·9015	−12°·15	1 to 7·6	—	—	0·09	—
Lowest „ „ ..	·8575	−64°·72	1 „ 3·0	—	5 in 1	0·02	—
Highest „ „ ..	·927	+18°·09	1 „ 17·6	—	5 „ 50+	0·23	—
Average of "heavy" class ..	·9125	+2°·65	1 „ 4·65	Phellandrene absent	3·3 „ 1	0·11	—
Lowest „ „ „ ..	·8964	−19°·23	1 „ 3·0		5 „ 1	0·02	—
Highest „ „ „ ..	·927	+18°·09	1 „ 8·3		2 „ 1	0·23	—
Average of "light" class ..	·8721	−53°·23	1 „ 12·8	Phellandrene present	—	0·06	—
Lowest „ „ „ ..	·8575	−64°·72	1 „ 7·6		2 „ 1	0·02	—
Highest „ „ „ ..	·8848	−40°·20	1 „ 17·6		4 „ 50+	0·09	—

—	E. Globulus	E. Globulus	E. Globulus	E. Odorata	E. Oleosa	E. Amygdalina	E. Dumosa
Percentage of fraction 170°-175	38·2	28·8	20·0	29·6	38·0	33·0	41·4
Rotation (100 m.m.) „	+17°·63	−2°·36	+4°·70	+16°·96	+1°·56	−43°·5	+7°·05
Percentage of fraction 175°-180°	21·0	9·8	18·0	26·6	27·4	22·6	22·4
Rotation (100 m.m.) „	+16°·76	−1°·70	+2°·66	+17°·0	+2°·01	−43°·08	+4°·5

The PRESIDENT said this subject was an important one, and from the paper they were enabled to trace the source of some of the eucalyptus oils which had hitherto been little known to them. It was most valuable to pharmacists to know what eucalyptus oil should be used in medicine. Some had favoured the oil from *E. oleosa*, which was possessed of a peculiar aromatic odour, a penetration referred to by Mr. Davies as ethereal, and altogether was a superior kind of oil. It was preferred for inhalation, because it was more penetrating, and left a pleasanter feeling in the bronchial tubes than any other.

Mr. KILBY PEARS asked Mr. Davies if he had tried the effect of passing dry hydrochloric-acid gas through the oil in order to obtain the eucalyptol in a pure state. It had been reported in the journals that this was a good plan.

Mr. J. C. UMNEY wished to know if Mr. Davies had examined the citronella-scented oil more fully than was reported. He asked because he had seen a statement to the effect that, when subjected to the phellandrene test, it became perfectly solid.

Mr. HOGG remarked that the difference in the rotations of the different distillates seemed to indicate that the yields of eucalyptol from the various oils would be very different.

Mr. H. S. WELLCOME said he was interested in what had been said regarding the citronella scented oil, for he knew that large quantities of it came from some special factory in Australia to Germany where, he presumed, it was used as a substitute for citronella oil, perhaps to adulterate it.

Mr. BURROUGHS added to that that the oil was used for disguising the odour of ichthyol in ointments, which it did admirably.

Mr. MOSS said, in reference to Mr. Wellcome's remarks, that it was unlikely that the eucalyptus oil would be used for adulterating citronella oil. The latter oil did not come from Germany but from certain parts of the East Indies.

Mr. PETER MACEWAN said he might add that citronella oil cost at the rate of sixteenths of a penny per ounce, while the citronella-flavoured oil of eucalyptus cost 4*s*. or 5*s*. per lb. So there was no question about using the one for the other. The point of Mr. Davies's paper, which he considered a most valuable contribution to the literature on the subject, was that he had carried the knowledge regarding the eucalyptol content of eucalyptus oil one step further. The figures he had given as to specific gravity, specific rotation, solubility of the salicylic acid in the oil, and the solubility of the oil in spirit, or rather the solubility of the spirit in the oil, as he preferred to put it, were to a certain degree of importance, but that importance was nothing compared with the fact that Mr. Davies definitely proved that day that certain oils which were regarded as being of lower value than oil of *Eucalyptus Globulus*—he meant the oil of eucalyptus oleosa, and also the dumosa oil, which was really derived from the leaves of the oleosa plant and several others—that those oils, which were of low repute, did contain eucalyptol to a considerable extent. This was a good thing to know, and probably these oils might contain as much eucalyptol as the oil of *Eucalyptus Globulus*. After all, what they had to consider was that the active properties of eucalyptus oil were due to eucalyptol, so far as they knew, and now they found that the *E. oleosa* oil, which possessed certain other properties referred to by the President as making it preferable for inhalation, also contained eucalyptol to a sufficient extent to warrant its use in medicine. That was, he considered, a very important fact, and they as members of the Conference were greatly indebted to Mr. Davies and his colleague for bringing the matter before them. (Applause.) He noticed that all the fractions given by Mr. Davies as obtained between 170° and 180° showed difference in optical properties, so it was quite evident that these could have little reference to eucalyptol, which was a

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ging small Dispensing and Light Retail business; one who
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hours 8 to 8; no Sunday duties. Apply, with full particulars
e, salary, age, &c., with photo, Coles, Bournemouth.

; soon as convenient; accustomed to Mixed Country business;
out 20 or 21: reliable and good address; good references indis-
ours 8 to 8, no Sunday work; if required, time for study
Send photo (returned), age, height, experience, if abstainer,
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ton Street, Lewisham, S.E.

GER, with view to purchase; fullest particulars. Stanley
te, Ibstock, Ashby-de-la-Zouch.

ORS; 6 years' London experience; height 5 ft. 9 in.; 2½ years
erth. Allatt, 21 Regent Street.

-TENENS; qualified; experienced; disengaged August 24.
ms, 49 Arthur Road, Holloway, N.

-TENENS or Manager; knows Homœopathy; would pur-
. "Chemist," 38 Montpellier Road, N.W.

road; Manager or Senior; qualified; 16 years' experience;
ed. "Rhei," 17 Graham Road, Wimbledon.

Assistant; first-class experience and references; aged 22;
n preferred. T. P. Padwick, Station Road, Redhill.

seeks Re-engagement in Wholesale Druggist's; 3 years' expe-
e in laboratory. Apply, "Menthol," 288 Cable Street, E.

-TENENS or Permanent Manager; qualified; experienced;
gaged September 11. S., care of Meggesons, Mills Lane, E.C.

tant or Branch Manager; town preferred; experienced; good
ences; qualified. F. Miller, 15 Frindsbury Road, Strood, Kent.

ANT or Dispenser: first-class experience and references;
oors preferred, but not necessary. "Exalgine," 8 Church Street,

NSER (outdoors); aged 24; good Prescriber and Tooth Ex-
or; Apothecaries' Hall qualification; disengaged. "Dispenser,"
Road, S.W.

m-tenens, Manager, or Traveller for good house; qualified; over
ears' experience; married; disengaged. Care Mr. Lancaster,
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terman, Prescriber, Extractor; married; permanency; presently
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RTISER, having good knowledge of Wholesale Druggist
e, is open for re-engagement; highest references; aged 23.
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FIED Assistant, aged 35, of good experience and address,
es engagement in good middle-class trade; excellent experience
ary practice; Locum-tenens not objected to. State salary
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PART-TIME; analytical work preferred. F., 7 Earl Street, Finsbury, E.C.

LOCUM-TENENS; qualified; disengaged. "Æsculap," 32 Laurel Grove, Penge, S.E.

DISPENSER, temporary; disengaged till September 26. W. M., 34 Grenville Place, Brighton.

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AS Junior; 21; London preferred: outdoors; City and Suburban experience. Hill, 50 Bishopsgate Within.

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AS MANAGER; married; Minor qualification; aged 36; 19 years' experience. B., 57 St. James' Place, Plumstead, Woolwich.

AS Manager of Branch or Assistant in view of purchase; aged 29; Minor; good experience and references. J., 104 Boutport Street, Barnstaple.

ASSISTANT, unqualified, accustomed to London Stores trade, good Dispenser, desires re-engagement; age 26. "Chemist," Lazybank, Forest Gate.

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MANAGER or Locum-Tenens; experienced Dispenser and Prescriber; knowledge of Mechanical Dentistry; moderate salary; disengaged. "James," Bingham, Notts.

JUNIOR requires situation in or near Nottingham; Nottingham preferred; aged 22; height 5 ft. 6 in.; good references; Extractor. J. W., 393 Berridge Road, Hyson Green, Nottingham.

WHOLESALE; end of September.—Retail Assistant wishes to meet with permanency in Wholesale House; wet or dry; aged 23; not afraid of work; unexceptionable references. Franklin, 9 High Street, Wrexham.

WANTED, engagement as Manager, Locum-tenens, or Assistant; a seaside business preferred; qualified, experienced, good Prescriber and Extractor; would purchase a suitable business. Address, 270/6, Office of THE CHEMIST AND DRUGGIST, 42 Cannon Street, E.C.

EDWARDS, Chemist, Redruth, wishes to place his son with a qualified Chemist in a fair-sized business, where he will have every facility for learning the business in all its branches, except liquor and tobacco; aged 16; height 5 ft. 6in.; passed Preliminary, also Theoretical Chemistry, South Kensington Exam.; 6 months behind counter.

MISCELLANEOUS.

Special charges are made for Advertisements under this heading, which can be obtained on application.

TO Chemists and others.—A Dentist (qualified), having spare time, would visit regularly where business could be introduced; high commission offered. Address, "Dentist," c/o Elliot, Stationer, 7 The Pavement, Mill Lane, West Hampstead, London.

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MISCELLANEOUS.—Continued.

LITERARY.—TO CHEMISTS.—A medical man of good literary standing would be glad to arrange with chemists for the drawing-up of circulars relative to new preparations, &c., in which his technical knowledge and journalistic connection would be of service. Address, stating terms, to "Journalist," 378 Oxford Street, W.

LITERARY.—To Pharmaceutical Chemists—A house in the Drug Trade, which has several publications, requires the whole services of a Chemist of standing, with Major qualification, to take charge of Literary Department; salary £300 to £400 to commence; permanent post to one suitable. Address, "Pharmacy," Box 768, Willing's Advertising Offices, 125 Strand.

In the High Court of Justice, Chancery Division.—Mr. Justice Chitty.

In the matter of the Soden Mineral Produce Company, Limited and Reduced; and in the matter of the Companies Act, 1867.

NOTICE IS HEREBY GIVEN, that a Petition for confirming a resolution reducing the capital of the above Company from £20,000 to £10,000 was, on the 1st day of July, 1891, presented to Her Majesty's High Court of Justice, is now pending, and that the list of creditors of the company is to be made out as for the 1st day of October, 1891.

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Printed by Spottiswoode & Co., New-street Square; and Published at the Office, 42 Cannon Street, in the City of London.—*August* 22, 189

neutral body so far as its action upon the polarised ray was concerned. He should like to mention that eucalyptol in the final stages of purification ought to be treated with caustic soda and dry calcium chloride. Without that treatment they could not free it from those bodies which gave some samples of eucalyptol their resinifying properties.

The PRESIDENT, in calling upon Mr. Davies to reply, said that the *E. citriodora* oil possessed a very fine odour, and was on that account used by perfumers.

Mr. DAVIES stated that he had used the dry hydrochloric acid method for isolating eucalyptol, but the objection to that was that the dihydrochloride formed was apt to split up, not into eucalyptol and the acid merely, but with the formation of secondary products. For that reason he did not think it advisable to use the process in the experiments now reported upon. More accurate results were obtained by freezing, and although he had got the eucalyptol on the verge of purity, he was not satisfied, and would go on with that part of the subject. (Hear, hear.) He had no opportunity of testing the citronella-scented oil further than what was reported on in the paper, so that he was unable to corroborate the statements referred to by Mr. Umney. Mr. MacEwan had hit the point of the paper, for while they did not say that eucalyptol was the active constituent of eucalyptus oil, in the present state of their knowledge they considered it to be so, and they were surely justified in concluding, from the great levo-rotatory power of the amygdalina oil, that it was one which could not contain much, if any, eucalyptol.

The PRESIDENT, after complimenting Mr. Davies on the usefulness of his paper, made some intimations before the meeting adjourned for luncheon. In asking delegates to announce themselves, he suggested that they might be able to increase the popularity of the Conference in the districts from which they came, especially among young pharmacists. He further intimated that, for members who would stay in Cardiff over Friday, the local committee had arranged a visit to the Cardiff iron works, tin-stamping and enamelling works, the Tharsis copper works, and other places of interest, including the docks.

On resuming after luncheon, at 2.15, Mr. Ransom read to a small audience a paper on

THE OPIUM USED IN MEDICINE.

By E. M. HOLMES, F.L.S.

In this paper Mr. Holmes stated that Indian opium is not used in England. In one recent year only two cases of Malwa opium appeared to have been imported into this country, and it was unknown to retail chemists. He thought that there was no reason why India should not take the place of Turkey in supplying Great Britain and her colonies with the drug. It was true that the Indian opium differed materially from Turkey opium, as from the process of manufacture at present employed, it contained 30 per cent. of water, was apt to ferment and contained less morphia than Turkey opium. But he saw no reason why, if the necessity arose, some improvement could not be effected in the process of manufacture. The poppy grown in the higher altitudes in India yielded opium containing 50 per cent. more morphia than that gathered in the plains. He then proceeded to adduce reasons for anticipating that it may be beneficial for the Indian Government to look to Great Britain as an outlet for the opium produce, and these are:—the Chinese are now cultivating the poppy to a large extent, with the result that the opium exports of India are on the decrease; as the interior of Africa is opened up, a large supply of the drug will be required by the inhabitants of that country; and should Turkey become the seat of a European war, our supplies from that country will fail, and then it would be that India might step in. He also referred to the manufacture of opium in Australia, and gave it as his opinion that opium could be manufactured in India under proper English supervision, which would compete with the Turkey variety. Specimens of Indian opium were exhibited.

Referring to these, the PRESIDENT said that in the natural state they were much more moist. He added that the question of the decrease in the revenue from opium was certainly a question which would have to be faced in India ere long, but he was not sure that Mr. Holmes's suggestion would solve the problem. It was a wise suggestion, however, and was worthy consideration. He also stated that a little opium is still cultivated in Egypt, and is used by the natives there. He got specimens of that produced at Acheen and Dakoum.

Mr. DOTT said that Mr. Holmes's remarks referred to the future rather than the present. He did not think that the condition of poppy-culture in China was at all dangerous as long as the Chinese Government set their face against it, which they did just now. He did not think that Indian opium would be much improved. It was inferior to Persian opium, as anyone who had tried to make morphia from it must know.

Mr. CONROY said that, judging from the sample of the opium sent round the room, he thought it would make a very nauseous tincture. Persian opium gave a bad tincture, but the Indian would give a worse. He noticed that Mr. Holmes spoke of opium from Asia Minor containing from 11 to 15 per cent. of morphine. That was a point which he had mentioned in his own paper that morning, and he was glad to have this independent support for his contention that the B.P. standard should be raised.

Mr. F. W. PASSMORE thought that they were missing the point of Mr. Holmes's paper. He did not argue that Indian opium as now produced should be imported into England; but, in view of declined supply from the present sources, Mr. Holmes thought that it would be advantageous for the Indian authorities to consider if they could not so alter the method of manufacture followed in India as to produce a drug which would be acceptable in the English market. (Hear, hear.)

The PRESIDENT pressed home this moral, and the meeting passed on to the next paper—read, in the absence of the author by Mr. Naylor—viz.,

B.P. MEDICATED LOZENGES.

By FREDERICK DAVIS, B.SC.

This report contained the results of analyses commenced three years ago and completed then and at various periods since.

Samples of lozenges were obtained from six of the leading manufacturers (three London houses and three provincial). The author directed his observations chiefly to the following points :—

(1) The weight of each lozenge.
(2) The quality and nature of the gum employed, and
(3) The quantity of active ingredient contained in each lozenge.

He found the lozenges of various makers to differ very materially in weight, and not only the lozenges of various makers, but lozenges in the same parcels, varied to the extent of 2 grains. The appended table shows the average weights.

The Quality of the Gum Employed.—In three out of the six samples no gum acacia was present at all, a substitute of either tragacanth or tragacanth and dextrin being employed. In two of the remaining three cases a mixture of acacia and tragacanth was employed, whilst in the remaining sample dextrin was substituted for a portion of the acacia.

In estimating the quantity of active ingredients in each, the author took half a pound of lozenges, and the result was satisfactory in some few cases and very unsatisfactory in others. When each individual lozenge was estimated a deficiency or excess of active ingredient became apparent.

The appended tables show the quantity of active ingredient by operating upon half a pound of the respective sample, and taking the average by division for each lozenge. In the second column the quantity obtained from the largest lozenge found in the respective samples.

It will be observed that the lozenges as met with commercially differ very considerably, not only in size and shape, but in strength. This is the more regrettable because, whilst the lozenge is a palatable and convenient method of adminstering unpleasant drugs, it should be none the less accurate in its composition. Such being the case, the remedy would appear to resolve itself into one of three courses—namely, for every pharmacist to prepare his own lozenges, each having a definite weight, or that the Pharmacopœia should state the exact weight of each lozenge, and not, as at present, that a certain mass be divided into a certain number of parts, which may be either equal or unequal. It is true that the Pharmacopœia directs the lozenges to contain definite quantities of active ingredients, but this in practice is evidently not the case, owing to the unequal weights of the lozenges themselves. The *Lancet* some months since recommended that the lozenges be omitted from the Pharmacopœia altogether; and this is also worth consideration.

TABLE NO I.

Average Weight of Each Lozenge, in Grains.

Sample	Acid Benzoic	A. Tannic	Bismuth	Catechu	Fer. Redact.	Ipecac.	Morphia	Morphia et Ipecac.	Opium	Chlorat. of Potass.	Santonin	Sodii Bic.	Sulphur
I.	17½	17½	27¼	16	17	17	16½	15½	14½	22	16	20½	17½
II.	17⅝	15¼	30	16½	18	17	16⅜	15	15¾	23	15½	20	17½
III.	17½	17½	30½	15½	18	16½	16½	15½	1[illegible]¼	22½	17	21	20½
IV.	16¾	16¾	28⅓	15 7/16	17½	16½	17	17	15½	21¾	15½	22½	21
V.	16½	1[illegible]½	27½	1[illegible]¼	17⅔	17	17½	16½	17	2[illegible]¾	16½	21½	18¼
VI.	16¼	17	21⅜	15⅜	17¼	15	17½	15½	14½	22	15⅔	23	19⅓

TABLE NO. II.

Amount of Active Ingredient in Each Lozenge, in Grains.

Sample	Acid Benzoic I.	Acid Benzoic II.	A. Tannic I	A. Tannic II.	Bismuth I.	Bismuth II.	Catechu I.	Catechu II.	Fer. Redact. I.	Fer. Redact. II.	Ipecac. I.	Ipecac. II.	Morphia I.	Morphia II.	Morphia et Ipecac. I.	Morphia et Ipecac. II.	Opium I.	Opium II.	Chlorat. of Potass. I.	Chlorat. of Potass. II.	Santonin I.	Santonin II.	Sodii Bic. I.	Sodii Bic. II.	Sulphur I.	Sulphur II.
I.	½	[illegible]	½	[illegible]	1	1⅜	Not estimated		1¼	1½	Not estimated		1/40	1/35	1/45	1/30	1/8	1/8	6	6⅓	1	1¼	5	5¼	5	5⅝
II.	½	[illegible]	½	[illegible]	2	2¾			1⅓	1⅓			1/44	1/40	1/47	1/35	1/5	1/4	5	5¾	1	1⅓	5	5¾	5¾	6¼
III.	½	[illegible]	½	[illegible]	1⅝	1⅛			1	1¼			1/30	1/34	1/60	1/32	1/5	1/8	5	5⅔	1¼	1⅓	5½	5½	5	5¼
IV.	½	[illegible]	½	[illegible]	2	2¼			1	1⅓			1/48	1/40	1/36	1/33	1/5	1/4	5	5¾	1 1/12	1⅐	6	6⅓	5½	5⅝
V.	½	[illegible]	½	[illegible]	1¾	2			1	1⅐			1/45	1/44	1/36	1/34	1/12	1/6	6½	6½	1	1⅐	5	5¼	5	5¼
VI.	½	1 1/6	½	[illegible]	1½	1⅝			1	1¼			1/30	1/33	1/48	1/35	1/5	1/8	6¼	6⅝	1	1⅓	5	5⅓	5	5⅝
B:P.	½	½	½	½	2	2			1	1			1/36	1/36	1/36	1/36	1/10	1/10	5	5	1	1	5	5	5	5

The PRESIDENT thought the accusation made in the paper was rather a grave one. He thought there was not much difficulty in lozenge-making, although it was not generally followed by retail chemists. He had made sulphur lozenges himself, and he thought, with due care, lozenges could be made of fairly constant weight. He was surprised to hear that there was such a difference in the weight of trade lozenges and the amount of medicament in them. In one lozenge he noticed that the average was from 1¼ grain to 1⅓ grain of iron, while in another lozenge 1¾ grain in each was given.

Mr. ATKINS said they were indebted to Mr. Davis for bringing this subject before them. He could quite conceive that this was one of the papers that might possibly create a wrong or unfavourable impression outside, and that the results might be accentuated beyond their proper dimensions by readers in the press. He was very much surprised to hear the results which Mr. Davis had tabulated. There was no doubt that the work had been carefully done by him, and was, therefore, reliable. He took it as quite an Utopian idea for the ordinary pharmacist to think of making his own lozenges; it was quite out of the question, as there were certain mechanical difficulties in the production of lozenges which only those who had tried could appreciate. He thought they should not be cashiered from the Pharmacopœia. He offered no opinion as to the value of lozenges as a medicament, but he hoped they had not come to the point of leaving them out of the Pharmacopœia. He would suppose, in these days of accuracy in the production of galenical preparations on a large scale, with the improved modes in machinery and efficient trituration, there could be no difficulty in the production not only of lozenges of average weight, but of equally distributed medicinal value. It seemed to him that the value of Mr. Davis's paper was that directly the manufacturing houses who were engaged in this branch of the trade noticed the results, they would have their attention brought to the point, and deal with the accusation brought against them. (Applause.)

Mr. STROTHER thought the manufacturers were under this difficulty. They would like to have the opinion of the Conference, or of the Pharmaceutical Society, or of some body in which they could repose confidence, as to the actual weight that lozenges should be. When one manufacturer made a lozenge containing an exact amount of morphia, and another manufacturer made a similar lozenge with the same proportion of morphia, but in a larger-sized lozenge, it placed the first manufacturer in an awkward position. Referring to the compound sulphur lozenges, he said it was very easy to make them by employing heat; but when heat was employed the sulphur was changed and the lozenge spoiled. He thought a great many lozenges were made in that way. If such lozenges were dried by wind there was far more trouble and expense, but the lozenges were worth more and were far more active. Mr. Davis's paper would be a very useful one if it brought about an accurate weight for each lozenge. Then it would be very easy to test whether they were equal in strength.

Mr. BURROUGHS said, as to the difficulty of drying, which Mr. Strother mentioned, that had recently been obviated almost entirely by improvements in a drying-machine consisting of blowers [Sturtevant's] used in connection with hot-air boxes. The air could be heated by gas underneath the air-passage, or it might be heated by passing it through a box in which there were a number of steam-pipes. The air, as it came through the box, would take up the heat from the steam-pipes and condense the water, and when the hot air was brought over the powdered or massed material, it dried it very quickly, more quickly, indeed, than it could be dried in wind, unless it was the wind of the Sahara.

Mr. KNIGHT said there was one point he would like to refer to. It was said that some lozenges contained dextrin, and he understood that two or three houses had refused the lozenges containing it. Probably those lozenges were intended for the drug stores, where you could get two or three ounces of lozenges for something like three-halfpence. (Laughter.)

Mr. J. C. UMNEY said he had occasion a little while back to check some lozenges as to the amount of carbolic acid which they contained. The largest amount found in any one of those examined was 0·6 of a grain, instead of one grain. Probably it might be said that that was owing to the volatility of carbolic acid.

The **PRESIDENT** said the chief difficulty in making these lozenges in a small way was the drying. It was necessary to begin this at a low temperature first, and increase it. It was hardly likely that pharmacists would take up the manufacture unless they had apparatus for that purpose. As to the gum, there was nothing like gum arabic, and he thought nothing else should be used in making the Pharmacopœia lozenges. Neither dextrin nor tragacanth was admissible. He moved a vote of thanks to Mr. Davis for his interesting paper.

Mr. **MOSS** then read a paper, of which the following is a brief abstract.

CASCARA SAGRADA EXTRACTS.

By JOHN MOSS, F.I.C., F.C.S.

This paper had special reference to Question 8 on the Blue List. The author finds that, though water extracts all the active principles of cascara sagrada, they are not retained when a decoction is evaporated, as in making the official liquid extract; nor are they taken up and retained afterwards by the addition of the rectified spirit. Proof spirit not only exhausts the bark completely, but throws down no deposit of therapeutic value. A proof-spirit liquid extract is, therefore, more powerful as a laxative and aperient than that prepared by the official method.

The following liquid and solid extracts were studied as to their action by Dr. James Jardine, of Richmond.—

(*a*) Prepared from bark of spring, 1888.
(*b*) ,, ,, ,, 1889.
(*c*) ,, ,, ,, 1890.
(*d*) ,, ,, summer, 1890.

It appeared from the observations made by Dr. Jardine that bark collected in late summer is in no way inferior to spring-gathered bark, and that the older the bark the more benign is the action. Solid extracts of two winter-collected barks showed that what comes from North Oregon is not so certain in its effects as bark from South Oregon. The author entered fully into the consideration of this question, and his conclusions are in the main corroborated by Professor Searby of San Francisco. He also stated that he is engaged in separating the resins, &c., of cascara sagrada, and promised a further communication.

The **PRESIDENT** invited discussion, remarking that the drug, as one which had made its reputation within the past ten years, was of practical interest.

Mr. **KNIGHT** said he did not know who was responsible for this abominable Pharmacopœia preparation, but he supposed it was some professor or other. It was a bad preparation, quite different from what they had before the Pharmacopœia formula was published. It was a good thing in pharmacy to have elegance, especially when it was associated with efficiency, but this preparation had no elegance whatever. It separated into as many strata as the weeks it stood on the shelves. He did not think that a solid extract, made by repeated boiling of the bark in water, would be inert; but certainly a liquid extract so made was inert. That extract was the subject of great complaint amongst customers, and he noticed that when a more elegant and efficient preparation was substituted for the B.P. one, prescriptions no longer came back stamped as if the customer had been hunting about for an effective preparation. There might be some question as to departure from the B.P., but he was sure that it was the best policy to give the public active preparations upon which they could rely. He hoped that this discussion would impress upon the authorities that chemists did not want to dispense such things as extract. cascara (Jones), but good pharmacopœial preparations, if they would make them so. (Applause.)

The **PRESIDENT** gathered from Mr. Moss's paper that what he proposed was a reversal of the B.P. plan, namely to make the solid extract with water and the liquid extract with spirit.

Mr. **CONROY** said he could bear out Mr. Moss's conclusions. He did not like the B.P. process, but while they had it they would have to follow it. The old liquid extract made with proof spirit or equal parts of spirit and water was more active than the official kind. He highly complimented the author of the paper on the ability shown therein, adding that the way in which the blue list put the matter seemed to indicate that cascara should be the work of a life-time.

Mr. **BURROUGHS** said that a watery preparation of this drug had been used very largely, and in his experience it had given great satisfaction. The bark was simply extracted by repeated boilings in water.

Mr. **MOSS** then replied, saying, amidst laughter, that he hoped that he would not be the individual who would have to work at the cascara all his life. He did not intend to. The solid extract could be made as Mr. Burroughs said, but not the liquid.

Mr. **BURROUGHS** explained that he referred to a dry extract, and he was called upon to read the following paper on

MALT EXTRACT AND CASTOR OIL.

By S. M. BURROUGHS, F.R.G.S.

Castor oil has for many years been regarded as one of the most generally useful aperients, but its employment has been considerably limited on account of its nauseous flavour. As many experiments have been made with a view of obviating this difficulty the idea suggested itself of employing extract of malt as a vehicle, since the extract has been found so useful in masking the taste of cod-liver oil and other medicines of a nauseating character which are objected to by so many people.

The specimens presented are composed of nearly equal quantities of oil and extract of malt. They have been submitted to many therapeutists, and a general opinion has been expressed that the nauseous flavour of the oil is very little or not at all perceptible, and that no disagreeable taste is left in the mouth after the administration.

One advantage in the employment of extract of malt for disguising the flavour of castor oil is that the extract is itself a mild aperient in large doses and may be found a valuable aid in connection with the castor oil. The rationale is readily seen. The gum in the mistura olei ricini tends to cause early decomposition of the preparation, whereas the pseudo-solution of castor oil in malt extract appears to keep perfectly for an indefinite period. It will be observed that the mixture is light and clear. I am not yet able to say whether the oil is actually dissolved in the extract; I hesitate to call it a solution, but the chief evidence in favour is that, as I show it, it is translucent, and upon adding to water the mixture becomes turbid and forms an emulsion. The combination is, I believe, well adapted for giving to children and fastidious persons, and thus assists in making the oil available to patients hitherto unable to take it.

For preparing the mixture the mortar should be first warmed and the extract of malt triturated in it until it becomes somewhat liquefied. The castor oil should then be added gradually during continuous trituration.

Mr. Burroughs illustrated his paper by a demonstration of the solubility of the preparation in water, showing that it makes a milky emulsion, which remained in that condition before the audience for an hour.

The **PRESIDENT**, in inviting discussion, said a peculiarity about the sample Mr. Burroughs had shown was that the castor oil seemed to mix with extract of malt in a way that would produce a translucent emulsion, for he could scarcely perceive that it was a real solution. But it produced a peculiar translucent preparation, which hardly showed the character of an emulsion in the ordinary way. Few aqueous substances would suspend oily ones under ordinary conditions.

Mr. **GERRARD** said it seemed to him that Mr. Borroughs's preparation had a very good flavour. He thought there was in it a little essential oil of almonds, which was a very excellent oil for covering the unpleasant taste of castor oil or cod-liver oil. He did not think the preparation was a solution, but an emulsion; and the reason why they could not see the particles of oil in the preparation was probably because of the refractive power of light on the mixture of oil and malt being about the same. That it was an emulsion was pretty evident from the experiment which Mr. Borroughs had made, in which, after dilution, they still could find the division. He knew of no severer test for the division of emulsification than the dilution with water, whereby a uniform product was obtained, and which, after standing for an hour, left no signs of oil floating on the surface.

Mr. DOTT said it would be very interesting if the question could be cleared up as to whether the mixture of malt and oil was a solution or an emulsion, or whether the results were simply due to the refractive index of oil and malt extract being the same in both cases. That point might be determined.

Mr. KNIGHT inquired if, in the preparation of the mixture, equal volumes of equal weights were used.

Mr. BURROUGHS said the sample which he produced was mixed with water that morning at about ten o'clock, and the oily particles had come to the top in a very distinct layer. The ingredients were taken by measure—50 per cent. of each—because castor oil was administered by measure as a rule, and therefore it appeared desirable that the ingredients should be mixed by measure. He did not at all express the opinion that the mixture was a solution, as he had no authority to assure him that it was a solution.

Mr. MOSS said the upper layer did not appear to be entirely a separation of the oil, but rather of the emulsion of castor oil and malt, which was separated from the extract of malt, and would very readily mix with the liquid again.

Mr. BURROUGHS put that suggestion into operation. This is an emulsion, he said, of castor oil on the top—just as cream on the top of milk is an emulsion of oil. (Applause and laughter.)

LIQ. STRYCHNINÆ IN MIXTURES.

Mr. T. SHEPHEARD had sent a note on the following prescription:—

Liquor Fowleri	ʒij.
Liquor strychninæ	ʒj.
Aq. distillatæ ad..	℥iv.

On standing, this deposited acicular crystals of strychnine, and Mr. Shepheard thought that young pharmacists should get this warning. To that the President added that the plan generally adopted in this case was to use liq. arsenici hydrochlor., which was acid, and not alkaline like liq. Fowleri.

The Conference then passed on to the last paper, read in abstract by Mr. Ransom. It was

THE SOLVENT ACTION OF ALCOHOL OF DIFFERENT DEGREES OF STRENGTH ON SOME OF THE DRUGS USED IN MAKING PHARMACOPŒIAL TINCTURES.

By E. H. Farr and R. Wright, Pharmaceutical Chemists.

Note 5.—On Tincture of Henbane.

Table showing Quantitative Results of Estimation of Samples of Tincture of Henbane.

No.	Amount of Alkaloid in grains from 100 c.c. Tincture					Amount of Extractive in grains from 100 c.c. Tincture				
	80-per cent. Tincture	70-per-cent. Tincture	60-per-cent. Tincture	50-per-cent. Tincture	40-per-cent. Tincture	80-per-cent. Tincture	70-per-cent. Tincture	60-per-cent. Tincture	50-per-cent. Tincture	40-per-cent. Tincture
1	·006	·008	·008	·006	·008	3·02	3·22	3·58	3·66	3·44
2	·011	·011	·0105	·010	·010	3·98	4·60	4·94	5·26	5·26
3	·015	·015	·0135	·0145	·015	3·12	3·52	3·84	3·88	3·78
4	·009	·010	·009	·009	·0105	2·44	2·64	3·02	3·22	2·98
5	·0095	·010	·0095	·010	·010	1·98	2·48	2·78	2·92	2·98
6	·014	·013	·0145	·013	·013	3·70	3·78	4·12	4·30	4·26
7	·011	·0095	·011	·010	·010	3·08	3·58	3·82	4·06	3·60
8	·004	·010	·009	·0095	·009	3·10	3·50	3·50	3·63	3·40
9	·012	·012	·012	·013	·013	3·42	3·68	3·72	3·64	3·50
10	·011	·011	·012	·011	·011	2·70	3·40	3·42	3·44	3·18
11*	·009	·008	·009	·008	·008	2·14	2·54	·76	2·94	3·12
12*	·008	·0085	·008	·0085	·008	2·56	2·73	·82	2·97	3·24
Average	·093	·0105	·0105	·0102	·0104	2·90	3·28	3·52	3·64	3·56
Root	·0085	·0098	·0098	·0108	·0108	·946	1·03	1·24	1·46	1·51

* No. 11 and 12 series of Tinctures were prepared from the leaves of the annual plant.

Since the publication of their papers on tincture menstrua, read at the last meeting of the Pharmaceutical Conference, the authors have continued their work upon the alkaloidal tinctures. The objects aimed at have been:—

1. To ascertain what menstruum is best adapted for the exhaustion of the drug.
2. To find the average content in alkaloid and extractive of tinctures prepared with alcoholic menstrua of different strengths.
3. To test the comparative value of alternative processes for the preparation of tinctures.

The authors employed menstrua of 80, 70, 60, 50 and 40 per cent. strength (by volume), and find, as the result of experiments made with twelve specimens of henbane-leaves and one of root, that the alkaloid may be completely extracted by any of these menstrua.

The process employed for the estimation of the alkaloid in the tinctures consisted in evaporating 100 c.c. of the sample with the addition of water until all alcohol was driven off, allowing the residual liquor to cool, acidifying with dilute sulphuric acid, removing all colouring matter by agitation with successive portions of chloroform until the latter came away colourless, washing out traces of alkaloid from the mixed chloroformic washings with acidulated waters, and adding the latter to the original alkaloidal solution. From this the alkaloid was extracted by treating with ammonia in excess, and shaking out the liberated alkaloid with two or three doses of chloroform. The mixed chloroformic alkaloidal solutions were then shaken with a little slightly ammoniated water, and after separation the chloroform layer was drawn off and evaporated, the residue being heated at 100° until the weight was constant.

The percentage amount of extractive was ascertained by evaporating 10 c.c. of the sample, drying the residue at 100°, and multiplying the amount by 10.

The paper was illustrated by three tables, the first giving the percentage yield of alkaloid and extract dried at 100°, the second showing the results obtained on mixing the tinctures (1) with water, and (2) with 90 per cent. of alcohol (as indicating the presence or absence of fatty, waxy, resinous, and mucilaginous substances) and the third giving the results of experiments with the assay process.

The authors recommend the use of a 50-per-cent. menstruum for the preparation of this tincture, and also advocate its standardisation, the standard to be fixed at ·01 per cent. The results were also given of experiments upon the best process to follow in making the tincture.

Four processes were tried—namely, seven days' maceration, double maceration, maceration and percolation, and continuous percolation. From the results given it appears that either of these processes is quite effectual in removing the whole of the alkaloid present in the leaves, while the percentage of dry extract varies somewhat considerably, the tinctures prepared by continuous percolation showing the highest yield.

The PRESIDENT commented generally upon the work done by the authors on tinctures, and, as regarded tincture of henbane, said that it was a question whether a 50-per-cent. alcohol tincture would retain the chlorophyll for any length of time, as such tinctures often deposited the chlorophyll in an altered condition. But there was the advantage in the tincture proposed that it contained most of the mucilage. This was a good idea.

Mr. MACEWAN thought the Conference was not in a position to properly discuss all the work which Messrs. Farr and Wright had done on tinctures since the last meeting. He had read their papers with great interest, and considered that their work would rank as one of the most important researches in practical pharmacy in modern times. He suggested that in view of the completion of the work the authors should prepare a summary of their results for presentation to the Conference next year, when pharmacists would have an opportunity of discussing the matter, so that the Pharmacopœia authorities would have something for guidance in regard to it. (Applause.)

The **President**: You mean that they should codify what they have done?

Mr. **MacEwan**: Quite so.

Mr. **Gerrard** was inclined, from his own experience, to support the suggestion made by the authors of the paper. Pharmacists had thought that when they had a tincture of henbane which was green and which gave an oily precipitate with water that the tincture was the proper thing, but if he were to take a mixture of henbane he would prefer it clear, especially when it was evident that a tincture of that kind could be obtained which represented the full activity of the drug.

A vote of thanks was then unanimously awarded to the authors, and the meeting proceeding to

The Concluding Business.

The **President** said the next business was in connection with the Bell and Hills fund, which was a fund amounting to 10*l.* annually, given by Mr. T. H. Hills in memory of Mr. Jacob Bell. Unfortunately Mr. Hills was a great invalid at the present time, but for many years he took an active part in the meetings of the Conference. The books this year were to be presented to the chemists in Cardiff. They would be taken care of by the Free Library Committee in connection with the town of Cardiff. Mr. Ballinger, the librarian, was, he understood, present to receive the books and take charge of them on behalf of the chemists of the district. Unfortunately in Cardiff there was at the present time no chemists' association or any society representing pharmacists which they might call distinctly their own. But he understood that the books would be placed in a separate case at the free library for reference by any chemist of the district, and that they would be so far of great value as they would be accessible at any time when the library was open. That was an advantage, for they would be in a better position there than in the hands of an association which would find a difficulty in keeping the small library, which it might be able to maintain, always open. In addition to the ordinary volumes given in connection with the fund there were two volumes which were given by Mr. Hanbury in memory of his brother. He had great pleasure in handing the ten volumes to Mr. Munday, the local chairman, to be by him given to Mr. Ballinger, the librarian. He trusted that the books would be valued and much referred to by the chemists of the district, who would be by them enabled to form the nucleus of a library such as the Cardiff chemists might find of great service. (Applause.)

The present this year to the representatives of local pharmacy consisted of:—"The National Dispensatory," Dorvault's "L'Officine," Watts's "Dictionary of Chemistry" (vols. 1 and 2), Meyer's "Modern Theories of Chemistry," Proctor's "Practical Pharmacy," and Watts-Fownes' "Chemistry" (2 vols.). These were all handsomely bound in leather, and to the present were added, through the kindness of Mr. Thomas Hanbury, copies of "Pharmacographia" and "Science Papers."

Mr. **Munday** said he thanked the President and the Conference for the kind presentation to the chemists of Cardiff and district. The books would be a memento of the visit of the Conference to the town in more ways than one. They had no local association in Cardiff, but the visit of the Conference had brought them together many times to make the necessary arrangements, and he ventured to express the opinion that ere long a local association would be formed. (Loud applause.) But they considered, in receiving these books, that it would be far better for them to deposit them in the free library of the town, where the whole of the chemists of the district could have access to them. Even when their association was formed, if they had some place where they might meet once or twice a month, and in which the books might be kept, they might when they wanted them find that they had been borrowed by some one or other, and no one could tell where they were. So that, under any circumstances, it would be better for them to remain at the free library. It was the intention of the chemists of the town to augment the books with others, so that, should the Conference ever visit the town again, he hoped they would see a large library in the possession of the local association. (Applause.)

Mr. **Ballinger** said he did not propose to detain the Conference with any remarks of his own. But he rose to say that he was accompanied by the chairman of the General Committee of the Free Library, Mr. Peter Price, who was indeed the father of the free library—(applause)—and also by the Rev. W. E. Winks, who was chairman of the Book Sub-Committee. He would leave them to make any remarks that might be made by himself in their absence.

Councillor **Peter Price** said his duty was a very simple one—to accept very cordially the books which the President had directed the attention of the Conference to. The Free Library Committee would take care of them, and he ventured to promise that until such times as a local association might remove them to another place they would be in the library of Cardiff from one generation to another. The library in the town was a comparatively new one, having only been established some twenty or thirty years, but by-and-by it would become a very large one. These was no danger of these books ever being lost or sold, for, provided the local association was willing, they would remain in the library so long as the Corporation of Cardiff lasted and remained solvent. It was prescribed by law that all books in the free library should be open to the general public, and if anyone came and asked to look at these books, even though he might not be a chemist, they could not refuse him permission. But none but experts would care to look into them, and they would therefore practically be the local chemists' own property. (Sensation.)

The Rev. W. E. **Winks** said he understood that the books in question would be accessible not only to the gentlemen in the very honourable position of those he saw before him, but to their students and apprentices generally. They were for the furtherance of science. The committee very much hoped that the books would become the nucleus of a very large library. He sincerely trusted that every chemist in the town would read, mark, learn, and inwardly digest the whole set. (Laughter and applause.)

The **President**: We accept your conditions, which I understand are on the same lines as those under which you take charge of the Naturalists' Society's books.

Mr. **Munday**: They will be placed in the reference and not in the general library, so that that they will never be taken out of the building.

The Formulary Committee.

On the motion of Mr. **Southall**, seconded by Mr. **Gerrard**, the following gentlemen were reappointed the Unofficial Formulary Committee for the ensuing year:—

W. Martindale (Chairman)
W. A. H. Naylor (Secretary)
A. C. Abraham
T. Greenish
T. B. Groves
T. Maben
N. H. Martin
F. Ransom
R. Reynolds
C. Symes
R. Wright

Mr. **Southall**, in putting the motion, said he considered the committee had done good work, and

Mr. **Gerrard** expressed himself to the same effect, adding that, since the committee had commenced its labours, they had been able to get uniform preparations, where, hitherto, they were all travelling in different paths, and he was sure that the committee deserved the best thanks of the Conference.

Next Year's Conference.

Mr. **Boa**, who, on advancing to the platform, was received with loud applause, said he had simply to state that he had been requested by a very representative committee of the chemists of Edinburgh, which also included a number of gentlemen who were not chemists, but were rather closely connected with other branches of science—Professor Crum

Brown, Professor T. R. Fraser, Dr. Ralph Stockman, and Brigade-surgeon Aitchison, C.I.E. — to invite the Conference next year to Edinburgh. (Loud applause.) They were very enthusiastic in regard to the anticipated Conference next year, and he had been deputed to convey a personal invitation to the members to visit Edinburgh in 1892. As there was some talk about changing the time of meeting in its relation to the British Association, he had been instructed to say that whatever date would suit the Conference the committee at Edinburgh would make suit them. (Applause.) He might remind them that the visit to Edinburgh would be a pleasant contrast to the visit to Cardiff. Here they had been entertained by everything new. They had been shown a new dock, said to be the largest in the world. On the previous afternoon they visited a new town, which had grown up in about two years, and even less. In Edinburgh everything was ancient. They had there a castle the history of which went further back than he knew anything about. (Laughter.) As in this part of the country they had been shown the finest and largest dock in the world, at Edinburgh they would be shown the finest and largest bridge in the world. He had much pleasure in conveying the invitation of the chemists of Edinburgh, and also the assurance that they would do whatever they could to make the meeting a success. (Applause.)

In answer to Mr. Mason, the PRESIDENT said the British Association purposed holding its next meeting towards the end of September, 1892, but the time was not yet definitely fixed.

Mr. BOA said the deputation from Edinburgh to the British Association had instructions to the effect that some time towards the end of September would probably be the most suitable time for the meeting. Edinburgh in the month of August was so filled with visitors that there would be very great difficulty in accommodating members—in fact, he did not think it could be done.

Mr. DOTT said he wished to support what had been said by Mr. Boa. He had not the slightest doubt that at Edinburgh every member of the Conference would be most heartily welcomed. Mr. Boa had not entered into the details of the attractions of Edinburgh, perhaps because they were so well known no one required to be informed of them. There was another reason for the British Association being asked to come at the end of September besides the hotels being crowded. Edinburgh people almost to a man left the town in August, and it was very difficult to get them to come back before their appointed time, even for the British Association.

Mr. NAYLOR (Secretary) moved that the invitation so cordially presented on behalf of their Scotch friends be as cordially accepted by the meeting. (Applause.)

Mr. A. H. MASON seconded the motion. As he happened to have been present at the former meeting at Edinburgh—he would not say how long ago—he was quite sure they would have a most delightful gathering. He alluded to the pleasure part of their proceedings, for not only had they the natural attractions of the modern Athens—for in his opinion Edinburgh was one of the finest cities in the world—but they were taken most graciously and generously to the land of Sir Walter Scott. The excursions they had in the midst of such historical associations were such as to make him look forward with great pleasure to another visit to Edinburgh.

The PRESIDENT said he was sure as many as could would be pleased to accept the cordial invitation they had received. The time of the Conference must be left in the hands of the Executive, in conjunction with the local committee at Edinburgh.

The motion was carried unanimously, amid loud applause.

THE TIME OF MEETING.

Mr. PAYNE (Belfast) said at former meetings it had been suggested that it would be desirable that they should not always follow the British Association. The present appeared to him a most opportune time for again considering the question, as it was possible they might not meet exactly in the same week as the British Association, whether they would continue to follow it.

Mr. MASON: I think the British Association should follow us. (Laughter.)

Mr. PAYNE said he was anxious that the President should give notice that the question should be brought up for discussion at the next meeting.

The PRESIDENT said he thought Mr. Payne's suggestion might be accepted. They had an informal discussion of this question last year, but it was conditional on the feeling being expressed that there was a desire for a change. So far, however, they had had no expression of that kind either through the press or by the members of Conference, and it was hardly thought desirable that they should discuss the matter at Cardiff, which was such a distance away from what they might call the centre of the places of meeting of the Conference. Probably next year, when they met at Edinburgh, which was a more favourable centre, the matter might be discussed with better results.

Mr. PAYNE: I give notice that at next year's meeting I will be present and propose that we shall not meet in the same town or at the same time as the British Association.

The PRESIDENT said he had been ascertaining the feeling among the members of the Executive and others on this subject. He had spoken to a good number, and the opinion generally expressed was that the present mode of meeting a little antecedent to the British Association should be continued. He asked a few founders of the Conference and others, and they thought the general feeling was not in favour of a change. The matter had been discussed several times before, and the members said "Well, there are disadvantages on both sides; the *pros* and *cons* would take almost a day to discuss." If the members liked to have the matter more fully discussed next year, he would be pleased to hear it brought forward.

Mr. MASON thought that the resolution of which Mr. Payne had given notice was a little too strong. It would, if carried, actually prevent their meeting in the same town or at the same time as the British Association. He did not think Mr. Payne meant that.

Mr. PAYNE thought it would be better to give notice of a strong resolution in order that the matter might be fully discussed. He simply wished to bring the question on, and if any other resolution was proposed, or an amendment to his resolution was adopted, he might be very pleased to accept it; but, in the meantime, he thought it was better that it should take its present form.

Notice to that effect was accordingly given in writing.

ELECTION OF OFFICERS.

Mr. W. A. H. NAYLOR then submitted, on behalf of the Executive Committee, the following names to be elected as officers for the year 1891–92 :—

President.

E. C. C. Stanford, F.C.S., F.I.C.

Vice-Presidents.

M. Carteighe, F.I.C., F.C.S., London.
W. Gilmour, F.R.S.E., Edinburgh.
J. C. Thresh, M.B., D.Sc., Chelmsford.
J. R. Young, J.P., Edinburgh.

Treasurer.

R. H. Davies, F.I.C., F.C.S., London.

Hon. General Secretaries.

W. A. H. Naylor, F.I.C., F.C.S., London.
F. Ransom, F.C.S., Hitchin.

Hon. Local Secretary.

Peter Boa, Edinburgh.

Other Members of the Executive Committee.

D. B. Dott, F.R.S.E., Edinburgh.
J. L. Ewing, Edinburgh.
A. W. Gerrard, F.C.S., London.
Prof. Green, M.A., B.Sc., London.
J. Hodgkin, F.I.C., F.C.S., London.
E. M. Holmes, F.L.S., London.
W. Kirkby, F.R.M.S., Manchester.
J. Munday, Cardiff.
Alfred Coleman, Cardiff.

Auditors.

David Anthony, Cardiff, and Thomas Thompson, Edinburgh.

Mr. MASON, rising at this point, said, although one did not wish to have anything to say on occasions such as the present—and he found it rather difficult to say what he felt—yet he thought there would be a little disappointment if Mr. Martindale was not to occupy the chair another year. He had no doubt they could not have a more learned or more jolly President than they had in Mr. Stanford—(applause)—but he for one would be proud to see Mr. Martindale in the chair another year. He did not know whether this matter had been put to Mr. Martindale or whether it had been left to the judgment of the Council. (Loud applause.)

The President, after the applause had subsided, said he thanked Mr. Mason, and he thanked them all, for bringing this matter before him; but he must respectfully decline. He thought it was hardly possible for him to act again, and there were other calls and considerations, in view of which he thought it would be preferable that another President should be chosen for the meeting in Edinburgh. The Executive and he thought it should be someone in connection with Scotland, if it were possible. He thought the selection of Mr. Stanford, who was one of the founders of the Conference when it met at Newcastle, and had always taken a great interest in its meetings, was a happy one. He had a *suaviter in modo* which made him an agreeable companion, and in him they would find a worthier President than himself. ("No, no," and applause.)

Mr. Payne (Belfast) said in looking over the list of the Executive Committee for next year, and also over the lists for the past two years, he found what he thought was an omission, although, perhaps, not an intentional one. He had always found that members of the Conference, and particularly the Executive, had thought kindly of the country which he represented, but by some unaccountable mistake there had not been a single member of the committee of the British Pharmaceutical Conference residing in Ireland. The Conference must not forget that they in Ireland were of a tender nature, but they did not care for an apparent affront. If they treated them kindly they could get on with them, but if they did not, then they generally heard from them. (Laughter.) As an amendment, he would like to propose that the name of Mr. W. F. Wells, of Dublin, be added to the list of members of the committee. If they could possibly do this, he would beg them to do so.

Mr. MacEwan said they had got a magnificent representative of Ireland on the committee in Mr. Carteighe, the first Vice-President. (Laughter and applause.)

The President thought it would be rather irregular to press the amendment now. They had no intention of doing an injustice to Ireland. It had probably been an oversight, but the Secretary assured him that up to two years ago they had a member from the sister isle. He asked Mr. Payne to withdraw the amendment, as he thought in another year that Ireland would not be forgotten. (Applause.)

Mr. Payne said at the President's suggestion he withdrew his amendment.

Professor Green said he would like to call attention to one point which had possibly been overlooked. It was with reference to the composition of the Board of Vice-Presidents. All the gentlemen named there resided out of London with the exception of Mr. Carteighe, and his duties were so very onerous already that it seemed to him (Professor Green) that the Executive Committee might find themselves meeting without any Vice-President.

The President said he would attend the meetings of the Committee, for, as an ex-officio President, he was now one of the vice-presidents of the Conference.

The list of officers was put to the meeeting, and agreed to.

"Thanks, Very Much."

Mr. Hodgkin then moved the following resolution:—

> That the cordial thanks of the non-resident members of the British Pharmaceutical Conference be given to the local committee, especially to Mr. Munday, Mr. Coleman, Alderman Yorath, and Mr. Anthony.

It gave him great pleasure to move the resolution, and he not only expressed the feeling of those attending the Conference, but also of those who had benefited by the kindly arrangements and enjoyable trips which these gentlemen had arranged for their pleasure. They really did thank the committee for the great efforts they had made. (Loud applause.)

Mr. J. C. Umney said he had very great pleasure in seconding the motion proposed by Mr. Hodgkin. Their thanks were due for the very nice meeting they had had in Cardiff.

The vote of thanks was then accorded.

Mr. Coleman, who was received with loud demonstrations, said he was very much obliged to the proposer and seconder of the vote of thanks, and to them all, for the kind appreciation of their services. They had done all they could to make the visit enjoyable, and he hoped they would take away from Cardiff pleasant recollections of the town and its inhabitants.

Mr. Munday, who was received with continued applause, said, as chairman of the local committee, he thanked them kindly for the hearty sentiments they had been pleased to express towards them. It was a work of pleasure to them all, and he would hardly grieve when the time came round for them to visit Cardiff again. It was eleven years since last they visited it, and he hoped they would come again within that time. (Applause.)

Mr. Conroy said the motion he had to put was—"That the best thanks of the members of the Conference be given to the Mayor and Corporation of Cardiff for their kindness in lending the assembly rooms of the Town Hall for the conversazione on Monday last." He satisfied himself by simply moving the resolution.

Mr. R. H. Davies said he had much pleasure in seconding the resolution that Mr. Conroy had moved. They were all gratified very highly by the kindness of the Mayor and Corporation.

The motion was carried amidst applause.

Mr. John Moss said he had to ask them to give their very best thanks to Principal V. Jones and the Council of the University College of South Wales and Monmouthshire for allowing them the use of the lecture-theatre for the Conference. It would be difficult to find one better suited for the purpose. The theatre was well lighted, well ventilated, and the acoustic properties were good. What more was required for a meeting of that character? In thanking the Principal and the Committee of the College it might also be well to express a wish that the projected extension of the University improvement might soon be consummated. (Applause.)

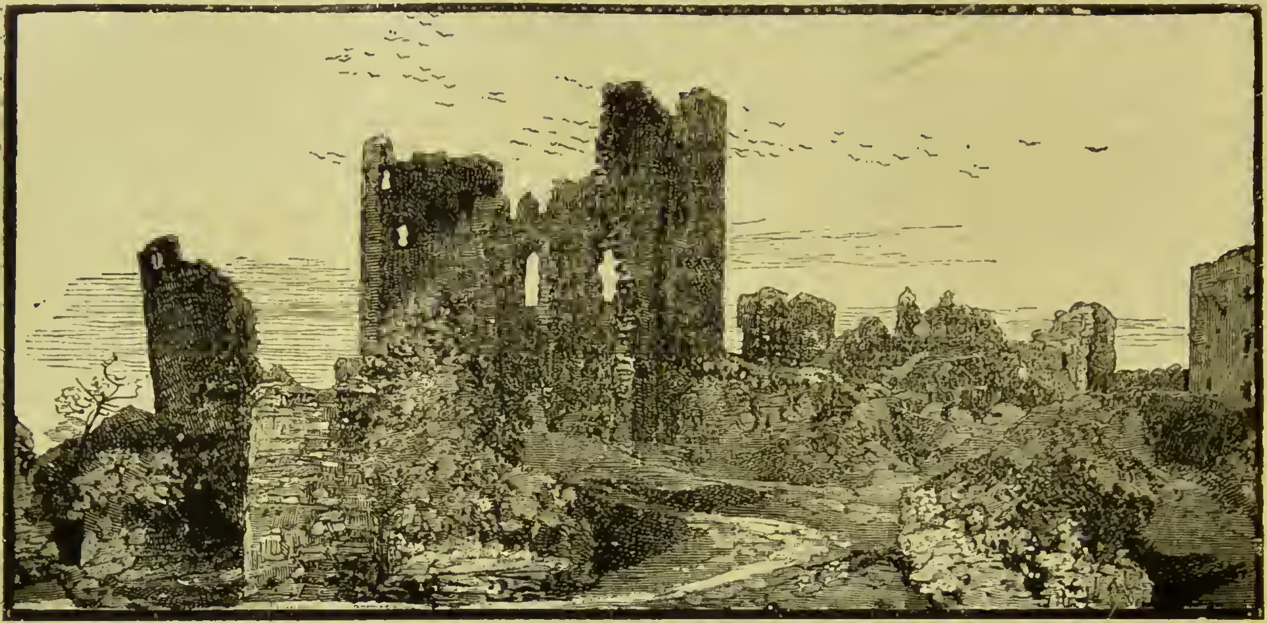
Mr. Payne (Belfast) seconded the resolution, which was carried with acclamation.

Mr. Atkins, rising to propose a vote of thanks to the President, said if it was his wish that Scotland should be represented by a Scotch President they would not forget to elect him as a future President. (Applause.) The resolution which he had to put to the meeting was—"That their hearty thanks be accorded to the President for the ability and courtesy with which he had discharged the duties of that office, and had conducted the business of the meeting." (Applause). Of course that met with their hearty acceptance, and no doubt it did not require one single word from him to add to it. He must not let it pass, however, without one word of hearty commendation. They were greatly indebted to the President, and the two words in the resolution, "ability" and "courtesy," covered all they desired to express. He would like to know who would be bold enough to challenge the ability of the President. He was *facile princeps* in pharmacy. Looking backward to the time when he met their President as a thin, attenuated student recruiting at Bournemouth twenty years ago, one could hardly recognise the same man in the portly gentleman who now filled the chair. (Laughter.) "It was unsafe to prophesy unless you know"—so wrote an author but lately passed away; but he ventured to prophesy that his friend Mr. Martindale would one day be Mayor of Winchelsea, and he should not be very much surprised if on the retirement of Mr. W. H. Smith he were elected Warden of the Cinque Ports. (Laughter and applause.) In regard to the President's courtesy, they knew it well. He also possessed as a chairman both firmness and consideration. Some of them were always desirous to speak, sometimes when they had not very much to say. The President understood that, of course, those gentlemen never came to the Conference—(laughter)—and whilst he ruled quietly and firmly, he was quite prepared to put down lawless obstruction of that kind. Now they were to accord to Mr. Martindale their thanks, and he was sure they would carry away with them most pleasant recollections of the admirable way in which he did his duty as chairman of the Conference. (Applause.)

Mr. T. **Tyrer** said he had been honoured by being asked to second the resolution proposed in choice terms by Mr. Atkins. Coming out of the room in the middle of the day Mr. Martindale had been unwise enough to say he was not much of a speaker. He could hardly conceive a worthier example than the President had shown in his pointed and courteous observations. Referring to the possibility of Mr. Martindale being the successor of Mr. W. H. Smith as Warden of the Cinque Ports, the speaker was sure that if that did happen they would be sure of a good day's outing—(laughter)—and he had great pleasure in wishing that they might go to Walmer Castle in the future. (Laughter and applause.)

The motion was then put and carried amidst continued plaudits.

The **President**, responding to the vote of thanks, said he

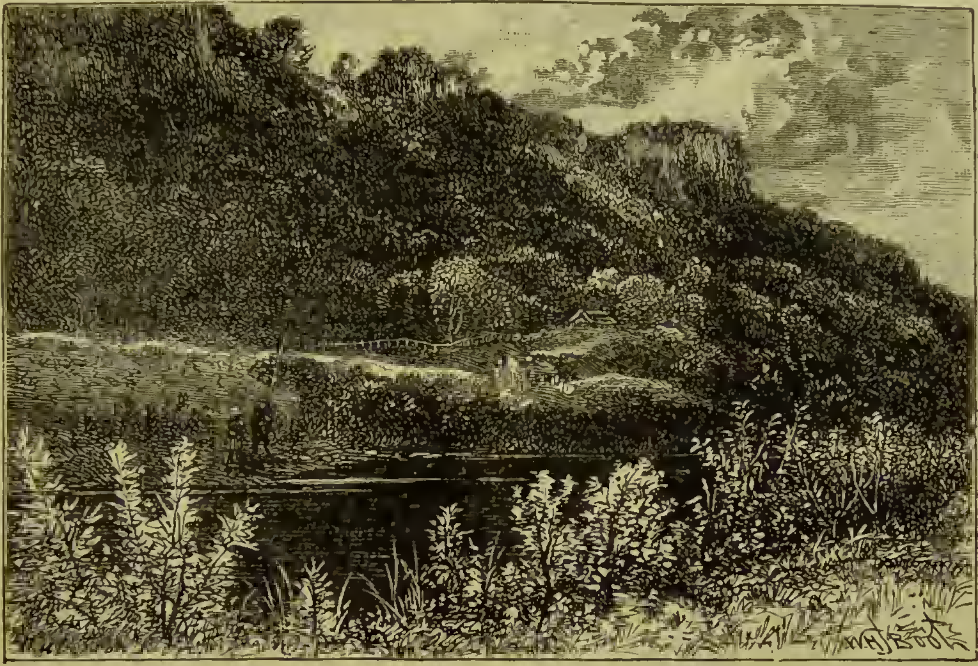


CAERPHILLY CASTLE: SCENE OF WEDNESDAY'S PLEASURE.

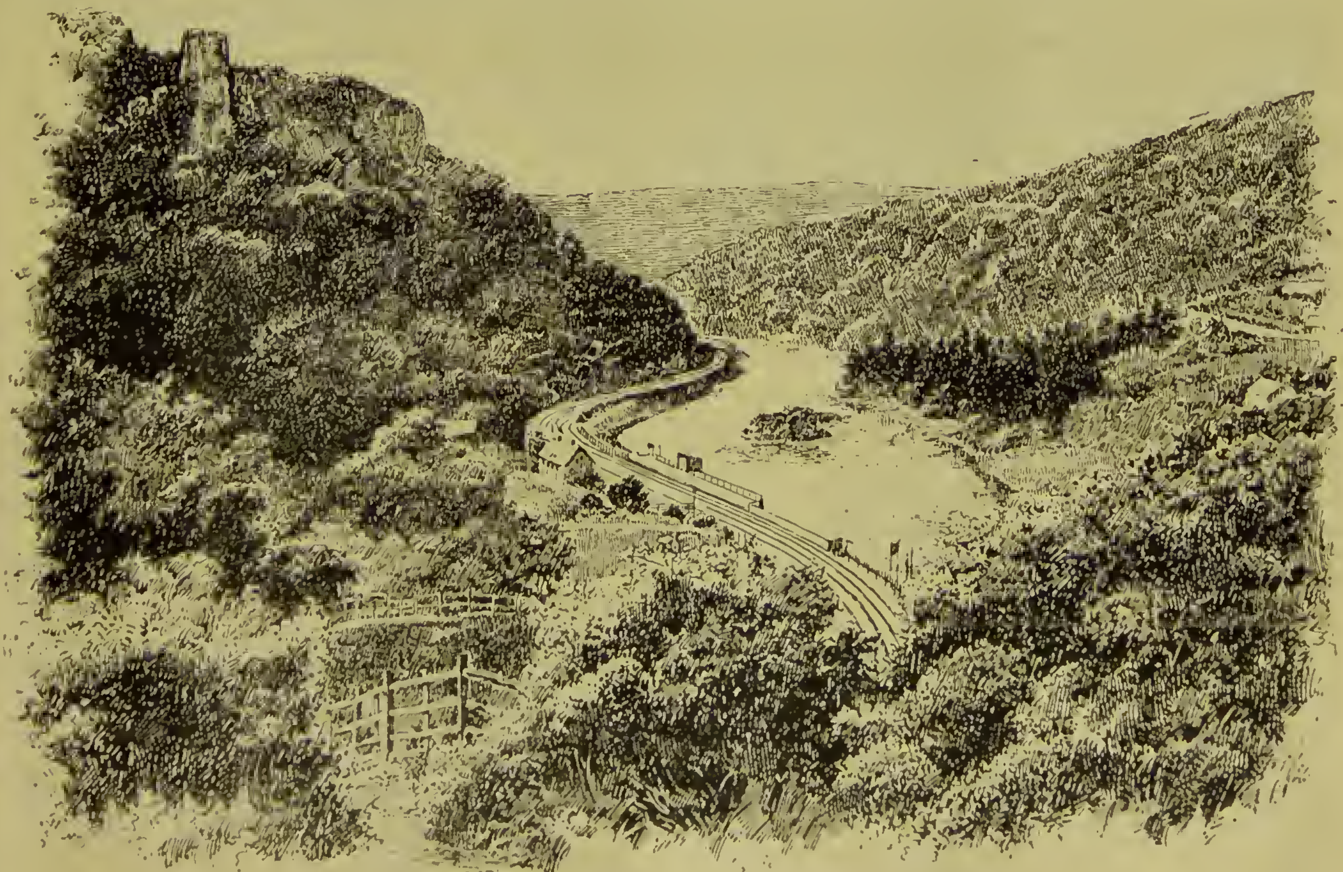
UNIVERSITY COLLEGE, CARDIFF: CONFERENCE QUARTERS.

thanked them very much. He, however, feared he was not a speaker. (Laughter and applause) He was sorry that Mr. Atkins had made reference to the small town where he he happened to reside. It was a town with only five hundred inhabitants, and although it had a Mayor and Corporation, it did not possess a schoolmaster—(laughter)—and you could not buy a newspaper in the place. As Mr. Atkins had been mayor of another important city, he wanted to hang the grapes up for him to catch. (Laughter.) He would, he hoped, have an invitation to the installation of Mr. W. H. Smith as Warden of the Cinque Ports; but as to the other thing, he would not mention it. He thanked them very much. (Loud applause.)

The Conference then adjourned, the carriages to take the party to Caerphilly Castle being at the door of the College.



VIEW OF SYMOND'S YAT.



PEN-AND-INK SKETCH OF SYMOND'S YAT, SHOWING RAILWAY.

THE ENTERTAINMENTS.

Tuesday's Excursion.

Leaving the place of meeting, a large company of ladies and gentlemen found their way by 'bus and tramcar to the Cardiff Docks, where a steamer was waiting to convey them to Barry Dock. After several false starts owing to repeated late detachments of eminent pharmacists, the last couple had to be conveyed by a small boat to the steamer from the pier. Leaving the Cardiff Docks, the steamer sailed round Penarth Head and past the pretty suburb of Penarth, which is about four miles by road and one by water from Cardiff, continuing *via* Lavernock Point and Scilly Island, until a private pier belonging to Lord Windsor was reached on Barry Island. There the excursionists disembarked and walked round the land side of Barry Dock to Barry Hotel, where it was expected tea would be ready. It appeared, however, that this hotel had been mistaken for the Barry Dock Hotel, a mile or so farther on, so the thirsty band had to extend their walk for twenty minutes longer. This, however, afforded opportunity for the better seeing of Barry, a town which has grown up in about two years.

PENARTH. FROM A PHOTOGRAPH BY W. H. BURTON.

After tea in the Barry Dock Hotel, about half the company returned by rail and half by steamer. Those who returned by water had a somewhat difficult road to travel in order to reach the steamer; a railway had to be crossed, and an interesting series of dodgings of coal-buckets and cables had to be performed along the dock, finally getting on board by means of a perpendicular gangway, the tide being low. Those who came through these difficulties were amply compensated by a lovely sail in the moonlight. A goodly number of courageous and comely ladies shared in this enjoyment. The water on the homeward sail was smooth. On the outward sail there was a stiff breeze, and the motion of the water was rather pronounced for the taste of any but those who rejoice on a heaving wave.

Wednesday's Excursion

After the Conference proceedings were concluded on Wednesday afternoon, an excursion was made to Caerphilly Castle, going by way of Castell Cach. About 140 persons went the trip, which was in brakes. It rained a part of the way, but not so seriously as to allay enthusiasm regarding the beautiful stretch of country through which the party went, and many expressions of delight were heard, this being so far the best thing the local committee had provided. This district of Wales once fairly bristled with castles, placed there under English rule to subject the sturdy Welshmen. Caerphilly Castle was the biggest and best of them all. It was built in 1268-71 by one of the clans or Earls of Gloucester, who was allied to the King Edward then reigning, and viceroyed the country for him. Caerphilly Castle was specially built to check the movements of Welshmen in the direction of Cardiff and Gloucester. The position selected is regarded by authorities as unique. When the party arrived at the castle Mr. Deane, a Cardiff pharmacist, who has a local reputation as an archeologist, acted as guide, and gave an interesting lecturette regarding the history of the castle and its associations. When the castle had served its purpose it was allowed to go to ruin, but it was some centuries before it reached the state shown in our sketch. The leaning tower is one of the principal features, but the great hall surpasses everything about in grandeur. This hall has been carefully preserved by Lord Bute, without altering in any way its character as a ruin. In this hall, through the liberality of Lord Bute, a sumptuous tea was served, and after the party had done justice to it, Mr. Martindale proposed a vote of thanks to the host. A similar compliment was paid to the hon. secretaries (Messrs. Naylor and Ransom). It was on the cards that the party would return by the brakes taking Cefn on the way, but those who wished to get to the British Association were wise enough to take the train. The brake party did not arrive in Cardiff until ten o'clock.

Smoking-concert.

Under the chairmanship of Mr. Michael Conroy a smoking-concert was to have opened in the Angel Hotel at 9 o'clock, but owing to the belated trippers it was some time after ten before Mr. Conroy ventured into the very imposing throne-chair which the landlord had provided for him, and which it goes without saying he filled admirably. The first thing was a cornet solo by Mr. Livesey, then there were songs by Messrs. A. H. Mason, Clarke (Chepstow), J. Hodgkin, J. Bain (Liverpool), T. Tyrer, C. J. Strother, R. H. Davies, J. C. Umney, and others. Mr. Joslyn gave a nice 'cello solo, and in the recitation line a very laughable thing was rendered by Mr. Kernick, of Cardiff. Quite an unusual tone was given to the concert by a lecture on 'Cats,' delivered by Mr. A. H. Allen, and illustrated with coloured and life-like pictures of the more important members of this species of *Felix*. The lecture was characterised by the evidence which it showed of the most painstaking research, and the knowledge which it revealed of the life-habits of the species and the evolution of the varieties thereof was such that the audience was occasionally moved to tears when they thought of the weary nights which the lecturer must have spent during his research. The tears, we must add, were those of laughter, for though the lecturer never smiled, exhibiting all the time a most doleful cast of countenance, the whole thing was so felinely done [one of Mr. Allen's, not ours] that catalepsy [A. H. A.] threatened several of the smokers. It was a very enjoyable evening.

Thursday's Excursion.

At 9.45 on Thursday morning 149 members of the Conference embarked in a train at the G. W. R. station, Cardiff, for a tour in one of the most interesting districts of South Wales. The train went north by Newport to Lydney, passing Chepstow, at both of which places short stoppages were made. From Lydney they were conveyed in carriages to Scowles iron mines through the Forest of Dean. All this district is intensely interesting to those of an archæological turn, for it was in this part of Wales, through which the Severn runs, that the Silures fought for their lands, foot by foot, with the invading Romans. This was about A.D. 50. Ostorius Scapula was at the head of the invaders then, and he was succeeded by Julius Frontinus, under whom the civilised conquerors settled down peacefully with the ancient Welsh. It happened, therefore, that in the early centuries of our era the mineral wealth of South Wales was tapped by the enterprising Southerners, and relics of their industry are still visible in the Scowles iron-mines, which they worked, and many other smaller examples of wrestlings with nature. It was to view these that the party travelled thither, and after an hour's inspection, not the least interesting part of the survey being concentrated on the flora of the district, which is rich and varied, the journey was resumed to Speech House, which was reached in an hour. The hotel which now goes by the ancient name was originally intended for the use of the ancient court of "The Speech," as mentioned in the laws and franchises of the mine. It is a substantial building of grey sandstone-rock, situated on Speech-house Hill, 572 feet above sea-level, and was built in 1680. Luncheon was served in a marquee at 1.30. After a good repast, Mr. Martindale proposed "The Health of the Ladies' Entertainment Committee," coupling the toast with the names of Mrs. Coleman and Mrs. Sanders. Mr. Coleman, in reply, said it had afforded his wife great pleasure to do her share, and Mrs. Sanders personally replied in a few bright words, amid cheers. Mr. Martindale proposed the "Local Committee," particularly Messrs. Coleman, Munday, Alderman Yorath, Hicks, and Anthony.

Mr. MUNDAY, in his reply, said it had been a very pleasant task to them, and he was sorry the meeting was drawing to a close.

Messrs. COLEMAN, HICKS, and Alderman YORATH also replied.

To the toast of the "Ladies" Mr. J. C. UMNEY was called upon to reply, and he said he must plead a certain amount of youthfulness and inexperience in matters of this kind; but from the great pleasure his elders took in the company of ladies, he looked forward to the future with some degree of interest.

Mr. Mardiudale was also toasted, and an impromptu dance was got up in the Speech-hall.

After luncheon the drive was resumed towards Symond's Yat, on the Wye. Hitherto the scenery was good, but now a country was entered whose magnificence few but those who have visited it can conceive. One sees from far above the wooded heights which bound the river such scenes as those in our sketches. The Wye is a tortuous stream, of which "magnificent double views," as the programme put it, are to be seen, for in one stretch of 600 yards it winds two miles long. In this neighbourhood, too, there is many an ancient sight, indications of war long since stilled, when the aborigines had but caverns to set off against the earthen ramparts and stern walls of the Roman invaders. Caractacus fought through Symond's Yat [gate] against the host whose advance he could do little to check, other than go from hill to hill, where his foes did least damage. The excursionists were much interested in all that was to be seen, and on their way were refreshed with tea served in Roch Lea House, on the banks of the river. The experience of last year was next repeated, the party being photographed in a shower of rain, which element had been present more or less all day.

When the party reached Cardiff by rail at 8·40 a "fruit-concert" was arranged in the Angel Hotel, which was attended by ladies and gentlemen, and was a fitting termination to a most enjoyable day.

MEMBERS PRESENT.

The attendance-book was signed by the following :—

Allen, A. H., Sheffield
Anthony, D., Cardiff
Arkinstall, W., London
Atkins, S. R., Salisbury
Bain, J., Liverpool
Barclay, J., Birmingham
Beggs, G. D., Dalkey
Beggs, Mrs. G. D., Dalkey
Bird, F. C. J., London
Blunt, T. P., Shrewsbury
Blunt, Mrs., Shrewsbury
Boa, Peter, Edinburgh
Bremridge, R., London
Clarke, C. G., London
Clarke, C. H., Chepstow
Clark, J., York
Coleman, A., Cardiff
Collier, H., London
Conroy, M., Liverpool
Dalgleish, H. J., Exeter
Davies, R. H., London
Davies, T., Porth
Dott, D. B., Edinburgh
Drane, W., West Norwood
Drysdale, J. W., London
Duck, W. G., Cardiff
Edwards, S., Godalming
Evans, G., Llanelly
Foakes, W. D., Bolton
Furnell, W., Cardiff
Furnivall, W. H., Cardiff
Gerrard, A. W., London
Giles, W. E., Newport
Glyde, T., Cardiff
Green, J., Swindon
Griffiths, B., Bridgend
Grôse, H. M., Swansea
Gurnnell, E., Woolwich
Hagon, A., Cardiff
Hall, H. E., London
Hardwick, S., Bournemouth
Harris, E. W., Merthyr Tydfil
Harris, S., Droitwich
Hinds, J., Coventry
Hodgkin, J., London
Holding, J., London
Hughes, J., Swansea
Johnson, M. K., London
Johnson, S., Wigan
Jones, J. A., Cardiff
Kay, J. P., Aberdeen
Knight, S. T., London
Leigh, M., Brighton
Lilson, R. W., Bradford
MacEwan, Peter, London
Maitland, P. O., London
Martindale, W., London
Martindale, W. H., jun., London
Mason, A. H., London
Matthews, J. H., London
Meadows, J., Leicester
Moss, J., London
Mumford, R., Cardiff
Munday, J. D., Cardiff
Naylor, W. A. H., London
Nowbould, J. M., Bradford
Passmore, F., London
Patchitt, E. C., Nottingham
Payne, J. C. C., Belfast
Pears, H. W. K., Brighton
Phillips, J., Wigan
Prust, R., Cardiff
Ransom, F., Hitchin
Rideal, S., London
Robinson, W. P., London
Sanders, W. J., Cardiff
Savage, W. D., Brighton
Schacht, G. F., Clifton
Short, F. W., London
Smith, J. T.
Southall, A., Birmingham
Spinney, F., Bournemouth
Stafford, W., Gloucester
Stevens, P. A., London
Strother, C. J., London
Stroud, J., Bristol
Sutton, R., Coventry
Tanner, A. E., London
Taylor, G. S., London
Thomas, D., Aberdare
Thomas, D., Ferndale
Tingle, J. G., London
Toone, J. C., Bournemouth
Towerzey, A., Clifton
Tyrer, T., London
Umney, J. C., London
Ward, J. S., Liverpool
Wellcome, H. S., London
Whigham, R. L., London
Whysall, W., Grantham
Williams, W. J., Cardiff
Williams, T. Howell, London
Williams, W. T., London
Wright, T. R., London
Yeatman, F. J., London
Yorath, T. V., Cardiff
Young, R. Fisher, New Barnet

FRENCH PHARMACEUTICAL NEWS.

(From our Paris Correspondent.)

MURDER AND ATTEMPTED SUICIDE BY A DOCTOR.—Dr. Lonis Lévy, of Nancy, having been refused a loan by his uncle, shot him dead with a revolver. The practitioner, who is aged 33, immediately swallowed the contents of a packet of white powder. This was presumed to be arsenic, but it had taken no effect when the murderer was arrested.

STERILISING FILTER.—Messrs. Ronart Frères and Messrs. Geneste and Herscher have designed a new filter, the object of which is to ensure the sterilisation of the water as well as its mechanical purification. The water is first placed in a boiler heated to 250° or 280° F., and then passes through a coil, tank, and other receptacles until it gradually cools down. The operation takes 10 or 15 minutes.

A "LABOUR OFFICE" is shortly to be added to the French Ministry of Commerce and Industry. Its object will be to study and tabulate information relating to work and industrial productions of all kinds, workmen's wages and general condition, the relations of labour with capital, &c., in France and abroad. The Minister of Commerce will thus have always at hand valuable statistics on the general conditions of industry.

A LEGACY OF 2,000*l*. has just been left by a Madame Gusman, of Pan, to be awarded to whoever may discover a really efficacious treatment of the commonest forms of confirmed organic heart-disease. She desires that, in the meanwhile, the interest of the sum be annually bestowed upon the person who produces the best work (theoretical or practical) on these maladies.

ARTIFICIAL SNUFF.—A man was arrested near the Rue Colbert last Thursday night, and was found to have upon him several packets of snuff of a peculiar odour and appearance. An examination proved that it was merely tan bark steeped in ammonia, and then perfumed. A quantity of tan, a sieve, and a bottle of ammonia were found concealed under the bed at his lodgings. The manufacture of snuff being a State monopoly in France, the prisoner will be committed for trial.

EXPENSIVE MATCHES.—The Bordeaux Custom House officers seized last March seventy-two boxes of foreign-made wax matches on board the steamer *Gironde and Garonne*, anchored in the harbour. The local police magistrates acquitted the owners of the vessel, against whom an action had been brought by the company enjoying the monopoly of making matches in this country. But this decision was appealed against, and the judgment has just been reversed. The owners have now been sentenced to 20*l*. fine, three days' imprisonment, and also to pay the cost of the two trials. The steamer was confiscated, but the owner can ransom the vessel on payment of her value, 4,000*l*.

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CARDIFF, 1891.

THE MEETING.

THE elements which make the annual meetings of the British Pharmaceutical Conference memorable have not been at their maximum this year. Cardiff, as the quickest grown, fastest growing, and, for its size, the most wealthy town in the kingdom, has its attractions; but these are not to be found in scientific culture. The Conference is just in that condition between failure and success which causes the Executive and all who are honestly interested in its proceedings to be despondent regarding its future. Its financial statement is unfavourable, its membership is on the down grade so far as number is concerned, and, what is worse, but a small percentage take active interest in the proceedings. Occasionally this week's meetings have been painfully dull, and it must have tried the most optimistic individual to have sought for any good augury for the future. For one thing, the scientific programme submitted was somewhat below the average, and a distressing feeling came over one occasionally that the whole thing would collapse. Of course, nothing like this could have happened, for the officers, especially Mr. Naylor (the senior honorary secretary), always managed to go through their work as if the meeting were the most successful one on record. That it was not so is not their fault. They are the creatures of circumstances, and when they find themselves deserted by most of those who have taken a leading part in the work in the past, confine their support to mellifluous letters of apology, few indeed coming forward to fill the gaps, they may be commiserated with rather than chided. Mr. Martindale had the thinnest platform that any president of the Conference has had for some years past. Three past presidents only supported him, among them the veteran Dr. Redwood—there in virtue of the fact that seventy years ago he was initiated into the mysteries of pharmacy in Cardiff. His tongue has not lost its fluency, although his eye is not so sharp as of old, and it was honour enough for any man to have such praise bestowed upon him as our Nestor gave Mr. Martindale for his address.

The Presidential Address.

Mr. Martindale's address commanded general admiration, and it was certainly a very able *résumé* of the modern developments of pharmacological research. Mr. Martindale is evidently a diligent, and apparently a reverent, student of the heterogeneous investigations by which physiological chemists and chemical physiologists are earning a precarious living at this end of the century. He makes no attempt to criticise the network of by-paths which these gentlemen are laying down in the domain of medical treatment, but seems willing to regard each new experiment as opening a scientific royal road to the cure of some morbific condition. The monotonous regularity with which one physiologist's experiments are overthrown by the next-comer in this search after truth; the astonishing history of the chloroform experiments of the President's most frequently quoted authority, and the melancholy collapse of the series of consumption cures which have been trumpeted to the world during the past twelve months have been quite sufficient to "give us pause" before assuming with such confidence as Mr. Martindale seems to inculcate that we have arrived in the smooth water of "the rational and scientific, as distinct from the empirical, treatment of disease." To say that "the prognostications as to the effect of these compounds on disease have not always been fulfilled" is to put the facts mildly—far too mildly, we think, for an utterance from the chair of the Pharmaceutical Conference, where the results of so much pharmacological labour and advertisement might have been appropriately sifted. But, however this may be, Mr. Martindale is to be congratulated on the choice of his subject, and on the ability with which he conveys by numerous illustrations some idea of the arcana of artificial medication, and the clear manner in which he expounds the tendency and methods of therapeutical studies at the present day. It is a difficult subject, but a most important part of the knowledge with which an accomplished pharmacist should be equipped.

Other modern developments do not seem to stimulate presidential hope so readily as Koch's tuberculin. That doctors are taught less of pharmacy than formerly would seem at first sight to suggest a probably wider field for those who make it their especial business, but in Mr. Martindale's view the effect will be that quackery, with which he seems to associate all elegant or agreeable or wholesale made and advertised medicines, will be more rampant. He is right, however, to recognise, sad as it may be to have to do so, that "the age of boluses is past."

Finishing up his address with a general commentary, we find the President in general agreement with the views we expressed last week as to Professor Attfield's proposals in regard to the addition of more synonyms to the British Pharmacopœia. His argument, however, that if chemists are to be liable to penalties in regard to drugs to which other traders are not subject, they have a right to the exclusive sale of such drugs, is a curious specimen of specious pleading. If X is Z—which it is not—then the law should declare Z to be X. Chemists are no more specially subject to penalties in regard to the sale of drugs than are other traders who sell drugs.

Mr. Martindale's remarks on the new syllabus, the Preliminary examination, the jubilee, and the Pharmacy Bill are those of a loyal son of the *alma mater* whom he claims as the parent of the Conference, an abandonment of the more honourable theory of spontaneous generation which previous Presidents have tried to keep up, but an assumption which is more in accordance with existing facts.

Tuesday's Papers.

Although the report of the Unofficial Formulary Committee was down as a paper, and was read by the President, it passed without attention, and so may we treat it, for the matter has already been reported in this journal. But we may say that in this matter the Conference is doing useful work. It is the custom to take first at the Conference those papers which authors contribute as the result of work done by support from the research fund of the Conference. The paper by Messrs. Cripps and Whitby was therefore first taken. It dealt with the general approximate analysis of ipecacuanha root, from which they have learnt that the drug contains and yields to petroleum ether a small percentage of free oleic acid, fatty oil, and a waxy substance. There are several resins in the root, 1·13 per cent. of tannin, 8·26 per cent. of sugars, and no less than 44 per cent. of starch. But the most interesting fact which the authors have, so far, discovered is that the drug contains at least two alkaloids in small proportion which are not emetine. As a contribution to the general chemical knowledge of this important drug the investigation promises to be valuable. After this paper one of direct pharmaceutical interest on preparations of ipecacuanha was read. This was by Mr. W. H. Symons, who has made the interesting discovery that the addition of a minute amount of solution of ammonia to a weak alcoholic menstruum is a means of securing a preparation of ipecacuanha which does not deposit, and retains its activity for at least five years—the period which Mr. Symons has had the preparation under observation. Naturally, the discussion was divided, Mr. Symons's note receiving the lion's share of attention. But a handsome tribute was paid to the Birmingham workers, although they appear to have obtained more starch from ipecacuanha than any speaker is inclined to believe that there is in it. Mr. Symons's idea came upon the meeting as a surprise, but everyone thought it a reasonable suggestion; indeed, the surprising thing is that no one has thought of it before, for emetine is one of those weak bases whose affinity

Ipecacuanha.

for alkalies is as strong as for acids, and to this circumstance the admirable keeping properties of the ammoniated tincture are probably due.

Euonymin. Mr. Michael Conroy's paper on extractum euonymi siccum touched a subject whose discussion seemed inevitable at this Conference. Mr. Conroy has found that the Pharmacopœia euonymin keeps very badly, becoming agglomerated into a solid mass at the dispensing-counter, and the object of his note was to indicate how this might be avoided. Briefly stated, Mr. Conroy suggests either of two plans as an improvement; first, instead of adding the sugar of milk to the almost finished extract, it should be added in the process of powdering that finished extract; or, preferably, instead of sugar of milk, 10 per cent. of light carbonate of magnesia should be used. By either method an article is obtained which retains its pulverulent condition permanently. There was a very good discussion on this note, manufacturing pharmacists chiefly taking part in it. Opinion was somewhat divided, but these facts were clearly indicated—namely, that the hygroscopic character of the extract is due to the large amount of extractive matter which it contains; and, as Mr. Naylor forcibly expressed it, the whole difficulty could be avoided by the selective method, that is, to use such a menstruum as will extract the active resins in preference to the extractive matter.

Indian Gums. The first paper read after luncheon was on Indian gums, by Dr. Rideal and Mr. Youle. Dr. Rideal read the paper, which was really a pharmaceutical edition of the one which he communicated to the Society of Chemical Industry last May. The point of the paper was that ghatti gum is a useful pharmaceutical gum, although some have objected to it on account of the amount of gelatinising material which it contains, but this, the authors pointed out, may be strained off, and the clear liquid is a strong and viscous mucilage for pharmaceutical purposes. Incidentally they pointed out that iron vessels should not be used in making the mucilage, as the gum has generally some adherent bark, which contains tannin, and so tends to darken the mucilage. One of the best discussions of the day followed this paper, and a good deal of amusement was thrown into it through the machinations of Mr. Strother, whose interest in the lozenge industry explains the point of his remarks. The result of the whole discussion was that for some purposes in pharmacy ghatti gum is a good substitute for gum acacia, but it must not be used in the unpicked state, as the vermiform pieces are those which make the gelatinous mass. It is preferable also to use the gum, no matter for what pharmaceutical purpose, as a mucilage, so that the woody matter may be strained away.

Oil of Copaiba A short note by Mr. R. A. Cripps on the estimation of oil of copaiba was the means of bringing before the meeting a useful piece of apparatus, which we are able to figure on page 282. The oil is carried away by means of steam, and may be collected and measured or weighed. The process is really an application on a small scale, as was afterwards explained, of the method of manufacturing oil of copaiba.

Liquid Persian Galbanum. Mr. Holmes's paper on this subject was concerned with the bibliography and botany of galbanum-yielding plants. He has determined, as far as the resources at his disposal have permitted, that all commercial galbanums come from or through Persia. The liquid galbanum is obtained from a species of *Ferula*, allied to *F. Galbaniflua*. The other important facts in the paper were that *Ferula rubricaulis*, Boiss, does not yield galbanum, but an alliaceous gum resin, and that Aitchison's *F. Galbaniflua* does not afford galbanum at all. There was no one in the meeting sufficiently informed to discuss this note.

Cardiff Water-supply. Mr. Hughes, the public analyst of Cardiff, described the sources of the present and future water-supply of Cardiff. Two stations are at present used, and, although the supply is adequate, the quality of the water is not high, and it is feared that increasing population would tend to contaminate it seriously with sewage. The water now drawn at Ely pumping-station comes from culverts driven into the magnesium limestone, and is of excessive hardness. The water from the Llanishen filter-beds is much softer, but it is a "gathered" water, and has all the objections attached to such waters. For the future, the Corporation of Cardiff are arranging for a supply from the Upper Taff Valley. The scheme will cost 373,000*l.*, and a portion, costing 240,000*l.*, is now under construction. This comprises a 320,000,000-gallon reservoir at Crew Isaf, with a pipe-line to Llanishen and other accessories, such as filter-beds and relief-tanks. The supply will be so adequate that in very dry seasons 700,000,000 gallons can be stored, providing 4,000,000 gallons per day to Cardiff and about 3,000,000 gallons per day to the river as statutory compensation. The quality of the water is excellent, as it is soft and free from organic impurity. The conversation which followed the paper did not add to what was contained in it, and perhaps the person who extracted most good from it was Mr. Atkins, who pointed out the important relation between the water-supply of a community and its death-rate, a good supply of pure water conducing to improved health. Mr. Schacht's remarks regarding the water lost in the Severn Tunnel gives rise to the thought that we have yet to solve a problem in connection with water-supply—viz., how to utilise those hard waters, which are not potable, for domestic purposes. Is a dual water-supply impossible?

Henbane. Supplementing the paper which he communicated to the Conference last year, in which he showed that annual and biennial henbane-leaves are of practically equal alkaloidal value, Mr. Gerrard now came forward with a note on commercial henbanes. He has examined leaves imported into this country from Germany. They are bad—at least this sample was—although Mr. Moss afterwards showed that German leaves equal to English are obtainable. But Mr. Gerrard's were mixed with stalks and roots, and were carelessly preserved. They yielded ·29 per mille of alkaloid. French leaves—the first year's biennial they were—yielded ·39 per mille of alkaloids, and were considered to be good. English leaves of the same year yielded the same amount, but the second year's tops gave ·45 per mille, which is a slightly higher amount than was obtained last year. Mr. Gerrard was well plied with questions, but the practical outcome of the discussion was the same as in 1890, viz.—the first year's biennial leaf is about as good as the second.

Henbane Seed. The last paper of the day was on henbane seed taken from plants grown at Hitchin. Mr. Ransom succeeded in isolating ·058 per cent. of "pure alkaloid" from the seed, which percentage is so much lower than is yielded by the leaves and root that it is obviously undesirable to introduce the seed for making galenical preparations. Mr. Ransom's process for isolating the alkaloid is to percolate with methylated spirit, making an extract of the tincture. Oil separates from the extract, and is washed with acidulated water, the extract being dissolved in the same liquid, and the alkaloid separated with ammonia and chloroform.

WEDNESDAY'S PAPERS.

Glacial Phosphoric Acid.

While the bigger half of the communications was reserved for the second day of the meeting, it almost seemed that they comprised the better part, for the attendance was well kept up, the discussions were brighter and of good tone, and the feeling generally was that the time was well spent. The first paper read was a useful one by Mr. John Hodgkin, in which the quality of commercial glacial phosphoric acid was set forth. This acid is, contrary to common belief, a mixture of free metaphosphoric acid with metaphosphate of sodium or ammonium, the latter being present in more than the small percentages which are supposed to place it as an impurity. Of five commercial specimens, four contained less than 50 per cent. of free metaphosphoric acid, the superior quality of the fifth being due to the fact that it had been made by the "regulation ammonia process." It is evident, from the figures in Mr. Hodgkin's table of analyses, that glacial phosphoric acid, contrary to a fairly general opinion, is perfectly unfit for pharmaceutical purposes, as it is not made by evaporating an acid solution produced by the oxidation of phosphorus with nitric acid. That, indeed, is impossible, and it is for this reason, and a persistent demand for "glacial" acid, that manufacturers are compelled to make it from ammonium phosphate. The use of sodium phosphate is objectionable because it affords the poorest acid. Incidentally Mr. Hodgkin described a neat process for the analysis of salt-containing acids which is based upon the behaviour of the acid and acid-salts towards methyl-orange and phenolphthaleïn. But without resorting to this pharmacists may judge of the quality of the acid by its clear ice-like appearance, and entire absence of opacity and colour. Lumps should be chosen in preference to sticks. Mr. Thomas Tyrer was one of those who took part in the discussion which followed and he in the main corroborated all that Mr. Hodgkin had said, especially emphasising the requirement that the acid should be free from sodium. In discussing the ethics of the subject Mr. Tyrer maintained that manufacturers are not to blame for chemical misnomers. Pharmacists demand from them a glacial phosphoric acid, and as such a thing in a state of pure acidity is physically impossible, they are compelled to supply what custom demands. He thought this should be the purest and strongest product by the ammonia process. With Mr. Hodgkin and him we share the opinion that the glacial acid should not be used for pharmaceutical purposes, at least as the equivalent, after dilution, of the B.P. acid.

Standardising.

Passing on to galenical pharmacy, the Conference had in Mr. Conroy's paper on the extracts of nux vomica and opium an illustration of the difficulties attending the introduction of a new principle into pharmacy. That the standardising of potent medicinal compounds is a desirable thing is admitted, but official success with the extracts named is open to question. The objection to the nux-vomica extract is that it is too thin, loses water on keeping, and thereupon becomes of higher alkaloidal value than the Pharmacopœia demands. The difficulty with the opium extracts arises from the fixed strength of the drug being below that which naturally obtains, consequently a 20-per-cent. extract is also too thin, Mr. Conroy proposes to overcome these objections by adding to the preparations, in the course of manufacture, a suitable proportion of glucose syrup, which is a colourless jelly not unlike tragacanth paste without the opacity. The effect of this addition is that the extracts are obtained of uniform consistency, suitable for use as pill excipients, but not hard enough to make into pills *per se*, and yet incapable of becoming harder or softer under ordinary conditions. While the discussion bore out Mr. Conroy's statements regarding the unsatisfactory nature of the B.P extracts, some of the speakers had methods of their own for overcoming the objections. In the case of nux vomica the diluent employed is the extractive matter of the drug itself, removed in a second extraction with weak spirit. This was suggested by Mr. J. C. Umney, and seems a sound method; but, while it brings the extract to proper consistency, it has not the preservative influence of the glucose syrup. Mr. Martindale hit the weakness of Mr. Conroy's proposal in regard to extract of opium. What we want in this case is a harder extract, which *per se* can be made into pills; that, indeed, as Mr. Grose pointed out, is what we require of many other extracts, especially extracts of belladonna and henbane, which in the fresh state contain more water than dispensers desire.

Aconite.

As a co-related subject, Mr. A. H. Allen's paper on the assay of aconite and its preparations fitly followed. This communication comprised a succinct *résumé* of the literature on the subject, in which the author acknowledged the work done by Messrs. Richards and Rogers, and discussed their statements regarding the excessively potent alkaloid, beta-aconitine, which they isolated from aconitine nitrate. But this part of the paper was of secondary importance, the purpose of the communication being to suggest the estimation of aconitine in alkaloidal residues by direct titration with standard mineral acid, using ether as the solvent of the alkaloid and methyl-orange as the indicator of saturation. As a confirmatory method, Mr. Allen proposed to take advantage of the decomposition of the alkaloid by saponification. The products of this decomposition are aconine and benzoic acid, the latter at least having an ascertained and constant relation to the aconitine, so that by recovering the benzoic acid and titrating it in ethereal solution with standard baryta-water, using phenolphthaleïn as the indicator, we may arrive at the amount of aconitine in residues. Some working results substantiated Mr. Allen's statements. Not the least interesting and useful part of the communication was the demonstration that Mr. Allen gave, in which home-made apparatus was used with surprising accuracy in this most delicate assay. In the course of the discussion following Mr. J. C. Umney proved himself the son of a worthy sire, by putting his finger on the weak spot of the communication and persistently keeping it there. Mr. Umney's contention was that the benzoic-acid method of assay is fallacious, because impure aconitine is associated with a gummy base, which also yields the acid on saponification. He did not inform the meeting that a parallel objection applies to the direct titration of the alkaloidal residue, but by inference it may be assumed that the gummy base will also neutralise hydrochloric acid. Mr. Umney's statements for a time overshadowed the practical details of the communication, but the meeting was very sympathetic towards the author, and with hearty acclamation supported the President's words of commendation regarding the utility of the suggestions made by Mr. Allen.

Eucalyptus Oil.

If any degenerating influence remained to contaminate the atmosphere of the meeting, it was quickly removed by the odorous and sanitary properties of eucalyptus oil, which Mr. R. H. Davies now brought before the Conference in the communication on that oil and eucalyptol prepared by him in association with Mr. Pearmain. Their investigation has enabled them to corroborate the statements of MacEwan and Squire that commercial oils of eucalyptus may broadly be divided into two classes, but their facts rather discredit the value of

E. amygdalina oil, and raise *dumosa*, or Mallee eucalyptus oil (*E. oleosa*, &c.), to a position equal to that of *E. Globulus*. This oil, which the particular leaves yield in large percentage, and consequently at a low price, appears to contain as much eucalyptol as *E. Globulus* oil. The facts given in the paper regarding eucalyptol are of practical value, and from the experiments on iodine absorption alone it will be seen that the quality of commercial eucalyptol may be judged. Pure eucalyptol is optically neutral and absorbs scarcely any iodine—some commercial samples absorb a great deal. With a verdict of "highly commended" on the paper, the discussion not adding materially to the facts, the Conference passed on to luncheon.

Indian Opium. After that opium was the first subject considered. In a short paper Mr. E. M. Holmes urged upon the Indian Government to encourage in their provinces the manufacture of opium for the English market. He submitted reasons why they should, the principal one being that the exports to China are decreasing. Although the opium at present made in India is unsuitable for medicinal purposes, Mr. Holmes considered that a better article could be made. This statement was overlooked in the discussion, which was a wholesale condemnation of Indian opium, as we know it. Apart from that, Mr. Holmes appears to be somewhat optimistic as to the produce of India, and pessimistic in regard to the sources of the present supply of medicinal opium.

Lozenges. The tale which Mr. Frederick Davis had to tell about medicinal lozenges was not very alarming. Those of them which contain the more potent ingredients have the active content in fair agreement with official requirements; but in many cases it is evident that considerable latitude is taken in the matter of size. Generally speaking, one expects to get B.P. lozenges weighing from 15 to 20 grains each, thus giving about 24 to 30 lozenges per oz. "Cheap" lozenges are dear medicine when they are too heavy, apart from anything they may lack in regard to the quality of gum and other ingredients used in their manufacture. Mr. Davis's suggestion that the B.P. should prescribe lozenges to be made of a definite weight was lost sight of by the Conference, the speakers being inclined to chide manufacturers gently, asking them not to do it again. Mr. Atkins accurately estimated the effect of the communication when he hinted that it might cause comment outside. It was the only subject of Wednesday which was reported at length in the local daily papers. Through this fact, and not through any strong effort on the part of the Conference, pharmacists may be compelled to insist upon manufacturers conforming to a standard in the matter of size. The Pharmacopœia must in the first instance supply that.

Cascara Sagrada. Mr. John Moss's commercial specialisation of cascara sagrada has now developed towards the scientific domain. Of his paper on the extracts of this drug certain therapeutic results were understood to form not the least interesting part; but Cardiff chemists had had their half-holiday, and they turned up at the meeting in force, and with a feminine escort. There are subjects which are better avoided before mixed audiences, and the details of Dr. Jardine's experiments were in that category. Mr. Moss submitted the results without the details, and they were, in conjunction with the pharmaceutical results, to the effect that the B. P. liquid extract is comparatively inactive, because, the drug being extracted with water in that case, the active resins are precipitated during evaporation. The preparation should be made with proof spirit; it is active then. There is no reason why the solid extract should not be made with water only. These results were generally confirmed in the course of the discussion. Mr. Moss' observations also show that bark collected in late summer is in no way inferior to spring-gathered bark, and that the older the bark the more benign. Although this is not the first time that the process for making ext. cascara sagrada liq. B.P. has been condemned, we trust that it is the last. The next edition should adopt the rational process.

Castor Oil and Malt Extract. Mr. S. M. Burroughs's brief notes on a new method of administering castor oil was a simple statement of the fact that if the oil be mixed with the extract while the latter is in a state of liquefaction through heat, a clear mixture is obtained, which emulsifies on the addition of water. Mr. Burroughs demonstrated this before the meeting, and passed round a sample. He flavours the mixture with oils of almonds, peppermint, and nutmeg, and states that a little oil of orange is an improvement. Judging from the samples which he submitted, the mixture is a splendid one, the taste of castor oil is not at all perceptible, and a perfect milk is formed on mixing the malt and oil with water. Everybody who spoke agreed that Mr. Burroughs's idea was a good one. After this Mr. T. Shepheard served up a chestnut in the shape of a note regarding the dispensing of liquor strychninæ.

Tinctures. Then the last paper of the day was reached, viz., that by Messrs. Wright and Farr on tincture of henbane. Since the last meeting of the Conference they have worked on nearly all the alkaloidal tinctures, and the present paper brings them near to the end of the series. After experimenting on henbane-leaves with several menstrua, they came to the conclusion that the best tincture is made by treating the drug by continuous percolation with 50-per-cent. alcohol. The product is as strong in active principle as any other, is permanent, and makes the nicest mixtures. The authors' results were briefly discussed, and confirmed by Mr. Gerrard, a suggestion being made that they should codify the whole results of the investigation for presentation to the Conference next year. The meeting now proceeded to transact

THE CONCLUDING BUSINESS.

The presentation of books from the Bell and Hills fund was likely to prolong the proceedings, as the books are to be deposited in the Free Library. The Committee of this library was fully represented at the meeting, and man after man of them got up to deliver profuse thanks and emphasise the conditions upon which they were received by them. Some were probably alarmed to find that the public would have free use of these standard pharmaceutical works, but it was far more alarming to notice that the present had swollen to the importance of a municipal event. Ere long the way was cleared for Mr. Peter Boa, of Edinburgh, who, on behalf of the pharmacists of the northern metropolis, gave the Conference an invitation to their city next year. There was a little talk as to the propriety of going where the British Association goes, and Mr. Payne definitely stated that he would bring this matter before the Conference next year, under which understanding the Conference, after deciding on Edinburgh, proceeded to elect office-bearers. Mr. E. C. C. Stanford was appointed President—a good selection, Mr. Stanford being an Anglo-Scotch pharmaceutical and technical chemist, whose *bonhomie* and gift of ready utterance will make him popular. And so the Conference ended. It was a tolerable success. The first day was dreadfully slow, but the second made up for it. The majority of the communications were practically useful, and the discussions were generally instructive and profitable.

STUDIES IN BANKRUPTCY.

MR. JOHN SMITH, Inspector-General in Bankruptcy under the Act of 1883, has just issued his report to the Board of Trade on the working of the Act during 1890. Since 1888 inclusive all failures, whether publicly investigated under the Bankruptcy Act or privately settled under the Deeds of Arrangement Act, have come under the official cognisance of the Inspector-General for statistical purposes. Consequently it may be fairly assumed that the records as they are now published represent, with a near approach to accuracy, the casualties occurring in the great war of commerce in which we are all more or less immediately concerned. It is gratifying to find that the figures indicate a steady diminution both in the number of insolvencies and in the amount of the losses. The records for the three years are as follows:—

—	1838	1889	1890
Bankruptcies	4,823	4,520	4,011
Deeds of arrangement ..	3,495	3,337	3,097
Estimated losses	£8,755,428	£7,935,004	£7,388,019

The "estimated losses" are arrived at by deducting the total assets from the total liabilities, after allowing an average of 33 per cent. of the former as costs and losses on realisation. The net result, large as it seems, is almost infinitesimal when compared with the total amount of the transactions of the country. The cheques cleared during the year, for instance, reached the astonishing figure of nearly eight thousand millions sterling, and, if these represented the whole of the business of the country—which, of course, they do not—the losses by insolvencies would be less than 1*l.* to every 1,000*l.* worth of business transacted. The total estimated loss to creditors under the Act of 1869 varied annually from eleven millions to twenty-three millions; so that the system inaugurated by the Act of 1883, providing for a rigorous official investigation of the circumstances occasioning each bankruptcy, must be allowed to have been abundantly justified. The new Act has, by this time, pretty well survived the not quite disinterested criticism of its keenest critics. They were, to a large extent, men who had fattened on the loose system which had prevailed before, and under which the actual losses to creditors were, no doubt, vastly more than they need have been, from the fact that a debtor's assets were but rarely fully disclosed.

An interesting feature brought out by the Inspector-General is that, generally, the decrease of insolvency is occurring among the trading classes. The failures of non-traders, however—of clerks, of officers in the army, clerks in holy orders, and of those parasites of legitimate commerce who appear in the *Gazette* under the title of "agents," financial, general, or commission—is stationary or increasing. The Inspector considers that the increased stringency of the bankruptcy laws as applied to traders, in regard especially to the neglect of proper book-keeping and other trading irregularities, has produced a wholesome effect; because, while it prevents reckless traders from too easily recommencing a similar career, it also serves as a warning to others to avoid their example. Moreover, the increased care shown by the larger houses in giving credit to the smaller ones, which the exposures of the bankruptcy courts have materially stimulated, has tended in a similar direction. We think the Inspector-General might also credit the humble services rendered to the body generally, in this respect, by such journals as this in carefully reporting class bankruptcies Without the check of such publicity both creditors and debtors would be much more reckless. It is clear that the considerations which affect traders are not in operation as regards non-traders, and it is pointed out that the quality of the failures of the latter is also much worse than that of traders generally. Bankrupt "gentlemen" have generally mortgaged their last stick before they appear in court. This is a subject which needs careful consideration. The law was last year increased in stringency, especially in regard to the discharge of trading bankrupts. The grocer or the chemist who has failed is only allowed to recommence business after a great deal of trouble and, sometimes, a considerable delay. The "gentleman" finds it very easy to reopen his campaign.

The report contains, besides, some pregnant observations in reference to bills of sale. The Inspector indicates with caution, but with much force, his evident opinion that it is time the legalisation of these documents should be withdrawn altogether. He gives facts to show that bills of sale are chiefly used for the purpose of defrauding creditors, or that they chiefly result in this, without any real benefit to borrowers. He believes it will be found that the great majority of the transactions are with professional money-lenders, and that the rate of interest is not, on the average, below 60 per cent. He gives testimony collected from the Official Receivers of most of the large towns of the country, which all support this assertion. It appears to be established that, in at least three-fourths of the cases where bills of sale are given, they merely serve to prolong for a longer or shorter period the hopeless struggle of the embarrassed trader, and to convey most of what remains of his scanty property into the pockets of professional usurers.

COMMENTARY.

THE HISTORY OF PHARMACY IN HOLLAND.—Professor W. Stoeder, of the University of Amsterdam, has written an exhaustive book on the history of pharmacy in the Netherlands, from the date of the earliest historical records extant until the year 1865, when the pharmacy laws which still, in the main, prevail in Holland were passed. The book was written at the suggestion of the Netherlands Pharmaceutical Association, in response to an appeal by Professor Schaer, of Zurich, to his colleagues abroad for assistance in the preparation of an international history of pharmacy. The honour of having been the first Dutch apotheker on record belongs to one "Theodorius de Apotheker," who in 1320 joined the order of the Brethren of Our Lady in s'Hertogenbosch (Bois-le-Duc). The second place, so far as can be ascertained, belongs to "Meyster Lambert," city apotheker of Zwolle, in 1342. Pharmacy in Holland does not seem to have been much of a money-making business in those days, for up to the sixteenth century the apotheker in some places had his clothes provided at the expense of the community, and enjoyed certain other advantages over his fellow-citizens. The first book on matters pharmaceutical printed in Holland was the "Groote Herbarius," published at Utrecht in 1538. In 1554 Rembertus Dodoens, body-physician to the Emperor Maximilian II., and afterwards professor at the University of Leiden—founded as a reward to the citizens of that city for their heroic defence against the Spaniards—published his "Kruidenboek," the book of herbs which became the literary lion of the day, and was translated into French, English, Flemish, and Latin. Dodoens was the first to adopt a systematic classification of plants. The art of printing is claimed by many as the invention of a Dutchman—his statue stands to-day in Haarlem market-place. It was certainly very early practised with exceptional skill in the Low Countries: hence the discovery of printing exercised an enormous influence upon the art of the pharmacist. In the middle of the sixteenth century the sale of poisons was regulated by special laws in most cities—among the first to adopt a Poisons Act being Utrecht, in 1523. The first genuinely Dutch Pharmacopœia (a translation of the work of Nicholas of Salerno was already in use much earlier) was the work of Dr. Nikolaas Tulp, of Amsterdam, in whose honour one of the new streets of the city is named. The work was brought out in 1636, the year following an exceptional visitation of the plague, which is said to have carried off 17,000 citizens in Amsterdam alone.

OLIVE OIL—OR WHAT ?—For straightforward simplicity commend to us Mr. A. B. Stewart, M.A., Ph.G., who writes to the *American Journal of Pharmacy* regarding olive oil. "On June 15, 1871, he bottled twelve 2-oz. bottles of pure olive oil, which were boxed and kept in a garret, in darkness, and where the temperature in winter was not sufficient to cause precipitation of margarin. On June 15, 1891, the oil was examined: three bottles had precipitated 25 per cent. of margarin, four 20 per cent., and five 16 to 18 of margarin." Then Mr. Stewart warmed the samples slightly, exposed some to sunlight, some in the dark, and it became "obvious [to him] that age and darkness cause precipitates, to a greater or less extent, of the margarin contained *in all oils*, from the fact that on repeated closeting of the oil precipitation would occur, while sunlight would render it translucent and transparent. (The italics are ours.) The oil was then subjected to chemical tests for purity, the results were compared with those from testing pure lard oil, and they revealed the fact that "what was apparently pure olive oil was in reality lard oil with a variable proportion of cotton-seed oil and minute traces of poppy oil." How Mr Stewart managed to arrive at the conclusion regarding the margarin in all oils is past comprehension; but it is nothing compared to the innocence displayed in recording the extremely ridiculous situation Mr. Stewart found himself in at the end of the twenty years. The thoughts he must have given to those samples, the possible discoveries regarding the properties of olive oil—and to find, after all, that he was nursing the produce from some Chicago hog!

PROTECTED PHARMACY.—It is often asserted that the system of State concessions for pharmacies in vogue in Germany secures the holder of the concession a better financial position than would in all probability be his were he to exercise his profession under free-competition conditions. The assertion is fallacious. As soon as it is known that a concession will be given to a certain town or neighbourhood, it becomes difficult for the pharmacist to procure a site for his pharmacy, except at an extortionate rent; and the fact that competition is limited causes so unhealthy a competition for concessions, whenever any come into the market, that the actual holder of the concession—and most of them are held by owners who have acquired their rights by purchase—has little left after paying interest on his capital. Thus, the Hof Apotheke at Oldenburg, which sixteen years ago sold at 186,000m., has now been resold for 300,000m. Another instance of the operation of this law is pointed out by the *Droguisten Zeitung*. In a small place in Lower Bavaria, a pharmacy, the takings of which amount to only 5,500m. a year, is offered for sale at 48,000m., of which 30,000m. have to be paid in cash. At 4½ per cent., the interest upon 48,000m. amounts to 2,160m.; at least 1,500m. has to be reckoned for stock and cost of goods sold; another 500m. for light and fuel, taxes and *etceteras*, leaving the fully-qualified pharmacist with 48,000m. at his command a net income of 1,340m., or 67*l.*, a year!

THE AMERICAN EAGLE AGAIN.—We are sorry that a recent reference of ours (in an editorial on "The Broken Bromine Compact") to the American eagle should have given umbrage to one of our transatlantic colleagues. That gentleman notifies us that the "American eagle can take care of itself, and it never screams without producing a profound sensation in Europe." Our correspondent will believe us if we say that we had not the least intention to speak disrespectfully of his eagle. We should be inexpressibly sorry to do anything that might provoke his screams. The European concert of German bands, Italian organ-grinders, and street-cries of various descriptions is enough for us. We don't want to add an hysterical American eagle. Let that interesting creature soar, let him flap his wings, let him continue to prey, if he must, upon the vitals of this journal, but for heaven's sake don't let him scream. We think we know that American editor. He comes from Watertoast, and is the lineal descendant of Mr. La Fayette Kettle, the gentle and cultured contributor to the *Watertoast Gazette*, who impressed one Martin Chuzzlewit with his desire that "the British lion might have his talons eradicated by the noble bill of the American eagle, and be taught to play upon the Irish harp and the Scotch fiddle that music which is breathed in every empty shell that lies upon the shores of green Co-lumbia." That was fifty years ago or more, but the music from the empty shells, which are plentiful over thar, still continues the same.

ALIEN PUBLIC ANALYSTS.—Mr. J. A. Wanklyn has called attention in the *Echo* to an important technical irregularity which may vitiate some convictions under the Sale of Food and Drugs Act. According to him more than one public analyst officially appointed is an unnaturalised alien, and as such, under the provisions of the Alien Act, disqualified for such an office. The appointments of such persons have been confirmed by the Local Government Board probably in ignorance of the fact or of the law. With characteristic vehemence Mr. Wanklyn colours the picture by sympathy with the "tradesmen whose reputation for honest dealing has been blasted by the alien," whom he likens to the sham priest, and whose case, he says, calls rather for the attentions of the Public Prosecutor than for the suffrage of a law-abiding public body.

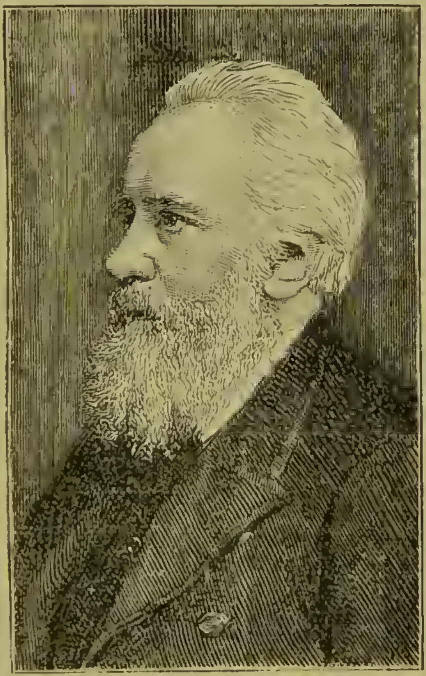
THE SEASONING.—*The South Wales Daily News* spiced its compliments to the Pharmaceutical Conference with a little irony. "The practice of medicine," said that paper, "has always been carried on as if there were something very mysterious in the prescriptions which it was deemed wise to conceal from the eyes and understanding of common mortals. To this day Greek and Latin names are employed for some of the most common of market products. What the family grocer would sell under the very homely name of salt is to be found in the druggist's shop or the Pharmacopœia under the name of chloride of sodium, and so with many other equally common commodities. It is astonishing what healing virtue many persons would readily allow chloride of sodium to possess which they could never be persuaded to ascribe to the salt that adorns the dinner-table. The big name with its foreign guise makes all the difference between the salt sold by the chemist and the salt sold by the grocer that there is between a lord and a commoner. It is all but impossible to persuade even the most intelligent of people that Lord So-and-so is not made of superior stuff to John Jones. In regard to medicines the big and mysterious name is half the cure, so that many who would turn away from the solution of washing soda would readily swallow subcarbonate of soda and admit that it had perfectly cured them of some serious complaint." As Mr. Weller said, in explaining the mysteries of the sausage trade, "It's the seasoning as does it."

The British Association for the Advancement of Science.

CARDIFF, 1891.

ABSTRACT OF THE ADDRESS BY WILLIAM HUGGINS, ESQ., D.C.L. (OXON.), LL.D. (CANTAB., EDIN., ET DUBL.), PH.D. (LUGD. BAT.), F.R.S., F.R.A.S., HON. F.R.S.E., &C., CORRESPONDANT DE L'INSTITUT DE FRANCE, PRESIDENT.

THE President in his address dealt exclusively with the science of astronomy. Not much had been heard about that science in presidential addresses during the present generation, for not since 1860, when the late Lord Wrottesley presided over the association's meeting, has an astronomer occupied the chair at its annual gathering. Dr. Huggins made good the deficiency as far as possible, for his address was brimful of those bald statements of facts accomplished and results ascertained which are the most eloquent sermon on humility that could be preached to man.



DR. WILLIAM HUGGINS.

To talk of the progress of astronomy during the last thirty years is practically to talk about the spectroscope, and accordingly the praises of that marvellous discovery deservedly rang through every sentence of the address.

After a brief introduction,

THE CHANGE OF COLOUR IN STARS.

The lecturer proceeded to speak of the star spectra, which are almost infinitely diversified, but yet may be classified in two apparently independent groups, the banded spectra of which incline respectively towards red or blue, the sun's place being towards the middle of the series. It is not certain at present in which direction evolution is proceeding, whether stars now white pass by process of condensation into the orange and red stages, or whether the reverse is the case. Johnstone Stoney inclines to the latter view; Ritter believes that stars pass through a period of increasing temperature from the orange and red stage into white, and then cool down again through the same colour variations until they finally become white again at their approaching extinction. Finally, and this is the latest theory, it is suggested that the diversified spectra of the stars are simply due to differences of original constitution. Dr. Huggins, while acknowledging that the subject is obscure, still favours the evolutional theory, and adheres to th order in which he arranged the stars from their photographic spectra in 1879. In this order the white stars, broadly speaking, represent the early adult and most persistent stage of stellar life, the solar condition that of full maturity, and the orange and red stars with banded spectra the advance of old age. One conspicuous example in support of this theory is Sirius, a star which emits from forty to sixty times the light of our sun, even to the eye, which is insensible to ultra-violet light, in which Sirius is very rich, while its mass is not much more than double that of our sun. It follows that, unless we attribute to this star an improbably great emissive power, it must be of immense size, and in a much more diffuse, and therefore an earlier condition, than our sun, though probably at a later stage than those white stars in which the hydrogen lines are bright.

The brightness of a star would be affected by the nature of the substance by which the light was chiefly emitted. In the laboratory solid carbon exhibits the highest emissive power. A stellar stage in which radiation comes, to a large extent, from a photosphere of the solid particles of this substance would be favourable for great brilliancy. Though the stars are built up of matter essentially similar to that of the sun, it does not follow that the proportion of the different elements is everywhere the same.

THE COMPOSITION OF THE NEBULÆ.

In the nebulæ the elder Herschel saw portions of the fiery mist or "shining fluid" out of which the heavens and the earth had been slowly fashioned. For a time this view of the nebulæ gave place to that which regarded them as external galaxies, cosmical "sandheaps," too remote to be resolved into separate stars; though, indeed, in 1858 Mr. Herbert Spencer showed that the observations of nebulæ up to that time were really in favour of an evolutional progress.

In 1864 Dr. Huggins brought the spectroscope to bear upon them; the bright lines which flashed upon the eye showed the source of the light to be glowing gas, and so restored these bodies to what is probably their true place, as an early stage of sidereal life.

We have before us in the sun and planets obviously not a haphazard aggregation of bodies, but a system resting upon a multitude of relations pointing to a common physical cause. From these considerations Kant and Laplace formulated the nebular hypothesis, resting it on gravitation alone, for at that time the science of the conservation of energy was practically unknown. These philosophers showed how, on the supposition that the space now occupied by the solar system was once filled by a vaporous mass, the formation of the sun and planets could be reasonably accounted for.

By a totally different method of reasoning, modern science traces the solar system backward step by step to a similar state of things at the beginning. According to Helmholtz, the sun's heat is maintained by the contraction of his mass, at the rate of about 220 feet a year. Whether at the present time the sun is getting hotter or colder we do not certainly know. We can reason back to the time when the sun was sufficiently expanded to fill the whole space occupied by the solar system, and was reduced to a great glowing nebula. Though man's life, the life of the race perhaps, is too short to give us direct evidence of any distinct stages of so august a process, still the probability is great that the nebular hypothesis, especially in the more precise form given to it by Roche, represents broadly the succession of events through which the sun and the planets have passed.

The old view of the original matter of the nebulæ, that it consisted of a "fiery mist,"

> "A tumultuous cloud
> Instinct with fire and nitre,"

fell at once with the rise of the science of thermodynamics. In 1854 Helmholtz showed that the supposition of an original fiery condition of the nebulous stuff was unnecessary, since in the mutual gravitation of widely separated matter we have a store of potential energy sufficient to generate the high temperature of the sun and stars. We can scarcely go wrong in attributing the light of the nebulæ to the conversion of the gravitational energy of shrinkage into molecular motion.

Whence came it all?

The inquisitiveness of the human mind does not allow us to remain content with the interpretation of the present state of the cosmical masses, but suggests the questions—What was the original state of things? How has it come about that by the side of ageing worlds we have nebulæ in a relatively younger stage? Have any of them received their birth from dark suns, which have collided into new life, and so belong to a second or later generation of the heavenly bodies?

During the short historic period, indeed, there is no record of such an event; still it would seem to be only through the collision of dark suns, of which the number must be increasing, that a temporary rejuvenescence of the heavens is possible, and by such ebbings and flowings of stellar life that the inevitable end to which evolution in its apparently uncompensated progress is carrying us can, even for a little, be delayed.

We cannot refuse to admit as possible such an origin for nebulæ.

In considering, however, the formation of the existing nebulæ we must bear in mind that, in the part of the heavens within our ken, the stars still in the early and middle stages of evolution exceed greatly in number those which appear to be in an advanced condition of condensation. Indeed, we find some stars which may be regarded as not far advanced beyond the nebular condition.

It may be that the cosmical bodies which are still nebulous owe their later development to some conditions of the part of space where they occur, such as conceivably a greater original homogeneity, in consequence of which condensation began less early. In other parts of space condensation may have been still further delayed, or even have not yet begun. It is worthy of remark that these nebulæ group themselves about the Milky Way, where we find a preponderance of the white-star type of stars, and almost exclusively the bright-line stars which Pickering associates with the planetary nebulæ. Further, Dr. Gill concludes, from the rapidity with which they impress themselves upon the plate, that the fainter stars of the Milky Way also, to a large extent, belong to this early type of stars.

Measuring the Movements of the Stars.

Besides its more direct use in the chemical analysis of the heavenly bodies, the spectroscope has given to us a great and unexpected power of advance along the lines of the older astronomy. In the future a higher value may, indeed, be placed upon this indirect use of the spectroscope than upon its chemical revelations.

By no direct astronomical methods could motions of approach or of recession of the stars be even detected, much less could they be measured. A body coming directly towards us or going directly from us appears to stand still. In the case of the stars we can receive no assistance from change of size or of brightness. The stars show no true discs in our instruments, and the nearest of them is so far off that if it were approaching us at the rate of a hundred miles in a second of time, a whole century of such rapid approach would not do more than increase its brightness by the one-fortieth part.

The spectroscope has placed in our hands the power which appeared to lie for ever beyond our grasp; it enables us to measure directly, and under favourable circumstances, to within a mile per second, or even less, the speed of approach or of recession of a heavenly body. This method of observation has the great advantage for the astronomer of being independent of the distance of the moving body, and is therefore as applicable and as certain in the case of a body on the extreme confines of the visible universe, so long as it is bright enough, as in the case of a neighbouring planet.

Dr. Huggins proceeded to explain the reasons why the application of the spectroscope to this branch of research had been neglected for so many years. Defective instruments, and consequent faulty calculations, are largely to blame. During the last two years only this use of the spectroscope has taken its true place in astronomical research, and to it we shall probably owe the principal discoveries in sidereal astronomy which will be made during the coming century.

Of the accuracy with which it is now possible to measure the movement of stars one almost inconceivable instance was given. The movements of the star Arcturus, which is so stupendously remote that its light-waves can only be approximately estimated to journey two hundred years before they reach us, were checked—if such a word may be used without profanity—for three nights in succession by simultaneous observations at Potsdam and at the Lick Observatory in the United States, and the results agreed to within one-tenth of an English mile!

The Camera as the Handmaiden of Astronomy.

The closing portion of Mr. Huggins' address was devoted to a review of the aid rendered by the art of photography to the science of astronomy. As long ago as 1839 Arago suggested that the new discovery might be used for the purpose of taking pictures of the sun and moon, but practically nothing could be done until the advent of the modern silver-bromide gelatine plate, which, except for its grained texture, meets the needs of the astronomer at all points. It possesses extreme sensitiveness; it is always ready for use; it can be placed in any position; it can be exposed for hours; lastly, it does not need immediate development, and for this reason can be exposed again to the same object on succeeding nights, so as to make up by several instalments, as the weather may permit, the total time of exposure which is deemed necessary.

Without the assistance of photography, however greatly the resources of genius might overcome the optical and mechanical difficulties of constructing large telescopes, the astronomer would have to depend in the last resource upon his eye. Now, we cannot by the force of continued looking bring into view an object too feebly luminous to be seen at the first and keenest moment of vision. But the feeblest light which falls upon the plate is not lost, but is taken in and stored up continuously. Each hour the plate gathers up 3,600 times the light-energy which it received during the first second. It is by this power of accumulation that the photographic plate may be said to increase, almost without limit, though not in separating power, the optical means at the disposal of the astronomer for the discovery or the observation of faint objects.

Two principal directions may be pointed out in which photography is of great service to the astronomer. It enables him within the comparatively short time of a single exposure to secure permanently, with great exactness, the relative positions of hundreds or even of thousands of stars, or the minute features of nebulæ or other objects, or the phenomena of a passing eclipse, a task which by means of the eye and hand could only be accomplished, if done at all, after a very great expenditure of time and labour. Photography puts it in the power of the astronomer to accomplish in the short span of his own life, and so enter into their fruition, great works which otherwise must have been passed on by him as a heritage of labour to succeeding generations.

The second great service which photography renders is not simply an aid to the powers the astronomer already possesses. On the contrary, the plate, by recording light-waves which are both too small and too large to excite vision in the eye, brings him into a new region of knowledge, such as the infra-red and the ultra-violet parts of the spectrum, which must have remained for ever unknown but for artificial help.

A Photographic Catalogue of the Heavens.

At an International Conference held in Paris in 1887 it was decided to prepare a "photographic chart and a catalogue of the heavens," and a committee was appointed to make the necessary arrangements. Three years were spent in preliminary work, and the present year will witness the practical beginning of the construction of the chart, with exposures corresponding to forty minutes' exposure at Paris, which it is expected will reach down to stars of about the fourteenth magnitude. As each plate is to be limited to four square degrees, and as each star, to avoid possible errors, is to appear on two plates, over 22,000 photographs will be required. For the more accurate determination of the positions of the stars, a *réseau* with lines at distances of 5mm. apart is to be previously impressed by a faint light upon the plate, so that the image of the *réseau* will appear together with the images of the stars when the plate is developed. This great work will be divided, according to their latitudes, among eighteen observatories provided with similar instruments.

The Problems to be Solved.

The heavens are richly but very irregularly inwrought with stars. The brighter stars cluster into well-known groups upon a background formed of an enlacement of streams and convoluted windings and intertwined spirals of fainter stars, which becomes richer and more intricate in the irregularly rifted zone of the Milky Way.

We, who form part of the emblazonry, can only see the design distorted and confused; here crowded, there scattered, at another place superposed. The groupings due to our position are mixed up with those which are real.

Can we suppose that each luminous point has no more relation to others near it than the accidental neighbourship of grains of sand upon the shore, or of particles of the wind-blown dust of the desert? Surely every star, from Sirius and Vega down to each grain of the light-dust of the Milky Way, has its present place in the heavenly pattern from the slow evolving of its past. We see a system of systems, for the broad features of clusters and streams and spiral windings which mark the general design are reproduced in every part. The whole is in motion, each point shifting its position by miles every second, though, from the august magnitude of their distances from us and from each other. it is only by the accumulated movements of years or of generations that some small changes of relative position reveal themselves.

The deciphering of this wonderfully intricate constitution of the heavens will be undoubtedly one of the chief astronomical works of the coming century. The primary task of tracing the sun's motion in space, together with the motions of the brighter stars, has been already put well within our reach by the spectroscopic method of the measurement of star-motions in the line of sight.

Since the time of Newton our knowledge of the phenomena of Nature has wonderfully increased; but man asks, perhaps more earnestly now than in his days, what is the ultimate reality behind the reality of the perceptions? Are they only the pebbles of the beach with which we have been playing? Does not the ocean of ultimate reality and truth lie beyond?

Legal Reports.

The Pharmacy Act (Ireland).—Prosecutions by the Pharmaceutical Society of Ireland.

In the Southern Division Police Court of Dublin, on Tuesday, before Mr. Byrne, Q.C., Walter John Anderson, 14 South Richmond Street, was summoned, at the suit of the Pharmaceutical Society of Ireland, for that he "did sell and keep open shop for retailing and compounding medical prescriptions, and did compound a medical prescription for one Patrick John Waters at 14 South Richmond Street, contrary to the Pharmacy Act (Ireland), 1875, and 38 and 39 Vict., cap. 57, sec. 30, not being a person qualified in that behalf according to law."

Mr. Robert Keating Clay (Messrs. Casey & Clay) appeared for the prosecution.

Mr. E. A. Ennis (instructed by Messrs. Ennis & Son) appeared for the defence.

Mr. Clay said the prosecution was brought under an Act which was passed for the purpose of preventing misadventure to health and life by the compounding of medical prescriptions by unqualified persons. Since this Act was passed a register of chemists qualified to compound medical prescriptions in Ireland was kept by the Pharmaceutical Society. No such person as the defendant was in that register, and it would be proved that on July 21 he kept his shop open and compounded a medical prescription.

Patrick John Waters, 33 Capel Street, was examined, and produced a prescription, which he stated that he presented in the shop, 14 Richmond Street, on July 21, to Mr. Anderson. He asked Mr. Anderson to make it up for him, and Mr. Anderson asked him to call back for it in half an hour. He did so, and received a bottle (produced). Witness paid Mr. Anderson for it. Witness noticed that the name of the shop was "The Richmond Drug Store."

Cross-examined by Mr. Ennis: Mr. Anderson did not say he could not compound the prescription for him.

Do you see the name on the bottle?—Yes; it is J. T. Holmes, member of the Pharmaceutical Society of Ireland. But I did not see him there.

Is not Mr. Anderson a dentist?—Yes, I believe so.

Mr. Ennis said his defence was simply that his client was a dentist, and had this shop in South Richmond Street. But there was a man named Holmes, who was a qualified chemist, with whom Mr. Anderson had made an agreement to share the premises with him. Mr. Holmes had a portion of the shop for compounding medicines, as he was qualified to compound. He received all the profits of the compounding.

Mr. Byrne asked what jurisdiction had he to deal with the case.

Mr. Clay said these prosecutions began in Belfast. There was an appeal, which was heard by the Queen's Bench, and was decided in favour of the Society. There were several cases in which jurisdiction had been exercised by the magistrates, and he submitted that under the 30th section his worship was bound to impose a penalty if there was any breach of the Act. He contended that the defence now put forward was an ingenious attempt to get out of an Act of Parliament. The defendant owned the shop, and he had no power to employ a qualified chemist unless he was a qualified man himself.

Mr. Ennis: That is not so.

Mr. Clay: I will show you that it is so under the Act. He could be convicted for the mere act of selling.

Mr. Arthur Ferrall, Registrar of the Pharmaceutical Society, was examined, and stated that Mr. Anderson was not a registered member of the Society.

Mr. John Thomas Holmes, examined by Mr. Ennis, stated that he was a registered member of the Pharmaceutical Society since 1875. Mr. Anderson himself was a chemist and druggist and a dentist. He (Anderson) had power to sell poisons.

Witness was handed the prescription in question, and said he could not remember whether he made it up or not. Mr. Anderson acted as his assistant, but he could not say if he ever made up prescriptions. Witness was in the habit of compounding the prescriptions in the shop, and he authorised no person else to compound them. Mr. Anderson took in the prescriptions, and when witness came back he attended to them.

Cross-examined by Mr. Clay: Where do you live?—72 Blessington Street.

Were you in the defendant's shop on July 21 at all?—I cannot answer that.

Will you swear you were there that day at all?—I will not.

Here is the bottle with your name on it. Will you swear that is your handwriting on the label?—I will not.

Then you did not make up the prescription?—I can't say that I did.

How many times were you in the defendant's shop since April 19, the date of the agreement between you and Mr. Anderson?—About forty times.

What time did you go in each morning?—I did not go in in the morning. I went in when I liked. (Laughter.)

You also entered into an agreement with Mr. Farlow of Berkeley Road. How much time did you spend in his establishment?—I went in at 10 o'clock in the morning and compounded prescriptions that came there. I went back again at 2 o'clock and also 7 o'clock in the evening.

Did you pay for an ounce of the drugs you compounded in South Richmond Street?—I do not think so.

, Mr. Clay handed in the agreement between the witness and the defendant, and drew the magistrate's attention to the fact that, while the document itself was dated April 19, the stamp bore the date of August 1. He now had to ask the witness did he sign the document on April 19?

The Witness: I did not.

Mr. Clay: I will not ask you any further questions. The case has been made a great deal worse by this attempt to deceive the court and to defeat the Act of Parliament.

Mr. Byrne said he would convict on the part of the summons which charged the defendant with keeping open shop for the compounding of medical prescriptions and the sale of medicine, and, if the prosecution wished, he would amend the summons.

Mr. Clay said he would adopt his worship's suggestion.

Mr. Ennis said as this was the first case of the kind in Dublin, the prosecution ought not to press for the full punishment.

Mr. Clay said, after the course adopted by the defendant, he would press for the full penalty.

Mr. Ennis said his client was going to leave the business in September. He (Mr. Ennis) would now plead guilty on this and the two other summonses, which were for selling medicines on two subsequent dates. He asked his worship not to impose a heavy fine under the circumstances.

Mr. Clay said his worship had no power to impose a less fine than 5*l.* All he (Mr. Clay) could do was to represent to the society, on behalf of whom Mr. Wells, a member of the council, was present, that this man admitted his offence, and was very sorry, and intended to give up business.

Mr. Byrne then imposed fines of 5*l.* and 1*l.* costs in each case.

Notice of appeal against the magisterial decision was immediately handed in.

On the same day, in the Northern Division Police Court, before Mr. Keys, Q.C., Mr. John Farlow, 14 Berkeley Road, was summoned by the Pharmaceutical Society for selling and keeping open a shop for the compounding of medical prescriptions for one Patrick John Waters, Capel Street, the defendant not being a person qualified according to law. The same solicitors appeared on both sides as in the previously reported case, and the evidence was similar to that given in the Southern Court.

The witness Waters deposed that he purchased the medicine from Mr. Farlow. He admitted he saw the name of Holmes on the shop, but was positive that Farlow gave him the medicine.

The defendant stated that he never sold the medicines, and that all prescriptions were made up by Mr. Holmes.

Mr. Keys held that the case was proved, and imposed a fine of 5*l.* for keeping the shop open for sale, and 5*l.* for selling the medicine, with 1*l.* costs in each case.

There were similar summonses against Mr. George R. Price and Mr. William Little, both of 14 Donnybrook Road. They pleaded guilty, and were each fined 5*l.*, and 1*l.* costs.

PROSECUTION OF CHEMISTS UNDER THE EXPLOSIVES ACT.

On Monday last, at the Chesterfield Borough Police-court, before the mayor and deputy-mayor, Messrs. Greaves & Son, chemists and druggists, Chesterfield, were charged as follows:—"That on July 25, then being the occupiers of certain premises registered for gunpowder, situate in Daniel's Yard, they unlawfully did not take all due precaution for preventing unauthorised persons having access to such premises;" and "That on August 10 unlawfully did keep in an unauthorised place—to wit, in a yard situate in Daniel's Yard, a certain explosive—that is to say, 4,800 detonators."

Defendants pleaded guilty to each charge.

Mr. Middleton, who prosecuted on behalf of the chief inspector of explosives for the district, said Messrs. Greaves had been dealers in explosives for many years, but it was not the first time they had appeared before that Bench for a breach of the law. The facts of the case revealed gross carelessness. With regard to gunpowder, the defendants had had a licence for many years. They were allowed to keep a certain quantity of gunpowder on their premises, and they had kept this quantity, as instructed, in a fire-proof safe. However, explosives, other than gunpowder, mixed explosives, being extra dangerous, required another licence. Messrs. Greaves had not had a licence for mixed explosives. Then, further, there were some called specially dangerous explosives, and, if they had a licence to keep explosives and mixed explosives, they could not keep these unless they had a police certificate, which was only granted after a police inspection. The explosives which Messrs. Greaves were charged with keeping—the 4,800 detonators—came under the specially dangerous section. In reference to the second offence—of not having taken due precaution to keep unauthorised persons away from the detonators—it appeared that there had been gross carelessness on the part of the defendants. Although Messrs. Greaves kept their gunpowder in a properly-constructed building and fire-proof safe, these 4,800 detonators were in a room which was accessible to a boy between 13 and 14 years of age. They were lying about perfectly loose, and the lad did not know their dangerous character or what they were. He took some of the detonators and distributed them amongst his friends. Some of these boys threw the detonators about, and played with them at Brampton, and one boy, named Thomas, threw two into a field at Whittington. One serious result had come to their knowledge. A girl picked one up at Brampton, and played with it for some time until it exploded. She had unfortunately lost three fingers and a thumb on one hand, and her left eye. This was the present result of Messrs. Greaves' carelessness in allowing these specially dangerous explosives to lie about. The penalty was at the rate of 2*s.* per lb. on the detonators found. The weight was 20½ lbs., and those who had instructed him could not see any way of dealing with these offences except by the infliction of the maximum penalty.

Mr. Abraham Greaves, addressing the magistrates, said they were very sorry to hear of the accident which had happened partly through their carelessness and partly through the carelessness of those in their employ. They had no idea that any special licence was required for the purpose of keeping detonators. They had been very particular indeed in keeping and storing explosives, and they had incurred enormous expenses in carrying out the Explosives Act according to the frequent orders from the Home Office. If they had known that any danger would arise, or that there was any need for a licence, they would not have been in default. In the first instance, when this Act came into force, they did everything they could. He hoped the Bench would pardon him for saying a few words on this subject. They took out a licence in 1875 when the new Act was passed, and they had a magazine built in accordance with instructions from the Government. In a little time after that magazine was built they applied for a licence for a factory magazine. The Home Office, however, knew so little of the law that they said they did not require one They wrote again, and a second time they told them they did not want a licence. They ultimately took out a certificate without a factory licence, although they were sure they were wrong in London. After some four or five months Major Ford came down and said their magazine would require a factory licence. They applied then and got a factory licence, for which, he maintained, the authorities never ought to have charged them. It was their own fault that a licence was not issued in the first place. They had to pay 10*l.* 10*s.* for that, and another 10*l.* 10*s.* to the Home Office. He did not think that was fair. Another affair occurred shortly afterwards and an order was issued that they were to watch their magazines night and day. He believed that was over a Fenian scare. They had to watch it night and day, although there was only one superintendent of police who insisted upon it in that district, and it was afterwards set aside by the authorities as not reasonable. It was not in that district they had to do this, but in another. The inspector then came down upon them, and they were ordered to rebuild their magazine, although it was built in accordance with plans forwarded to the proper quarters. They were told they must put up a concrete wall, which they did, but it collapsed. The first outlay amounted to 50*l.*, and the total expense had not been less than 100*l.* They had been very anxious to carry out everything and obey every order issued by the Government in this matter. Only last year they had a magazine built according to the Act for keeping dynamite, and after they had done this the superintendent of police said it did not meet the requirements of the times. They built another magazine costing 50*l.* This magazine had been registered and was now duly licensed. This would show that they had done all they could to meet the requirements of the authorities.

Mr. A. W. Greaves read section 52 of the Explosives Act, to the effect that no licence was required for the keeping of percussion caps or fog signals, and said they considered this referred to detonators. It was only by an order in Council which had only been sealed in the last seven days that they had learned that percussion caps were not detonators, and detonators not percussion caps. In the eye of the law they thought they were the same thing. However, the order in Council was the first intimation they had.

Mr. A. Greaves: We only had that last Monday. I maintain this order ought to be sent to us as well as to Mr. Emery.

Head-Constable Emery: This paper has been paid for. I apply for them.

Mr. Middleton said that Her Majesty might have made orders in Council, and certain orders, including one in reference to detonators, but the order which the defendants had not carried out was one made in 1883. Messrs. Greaves were in duty bound to make themselves conversant with orders in Council.

Mr. A. Greaves complained that no one could understand the Act and its sections. The Home Office ought to send them their orders. Detonators were not included, he understood, amongst specially dangerous explosives. They appeared in the Act for blasting purposes as plain as "a b c." They would never have been before the Bench if the orders had been sent to them, and they ought not to be fined. The Home Office ought to pay their expenses. The lowest penalty, the smallest coin of the realm, was quite sufficient to meet the case. They admitted they had done wrong, but it was in ignorance.

Mr. A. W. Greaves observed that, to show the difficulty of understanding the Act, he might mention to their worships the fact that some time ago it was thought necessary to give superintendents of police up and down the country a few hours' drill on the subject. Two persons' reading of the law was quite different. He had had that experience in Chesterfield.

The Mayor: The Bench think that you have been guilty of great carelessness in this case, and we shall fine you 2*l.* and costs for each offence. We could make you forfeit the detonators——

Mr. A. Greaves: We know you could.

The Mayor: But we shall not do that this time, as there is a little doubt about your knowing the law. But if you do not, you ought to have made yourself aquainted with it.

Mr. A. Greaves: This law ought to be made as plain as a pike-staff, and it is not.

The fines and costs were then paid, and Messrs. Greaves left the court.

BANKRUPTCY REPORTS.

Re SAMUEL SMITH SCOTT, 9 Leeming Street, Mansfield, Chemist and Druggist.

THIS debtor was examined at the Nottingham Bankruptcy Court on the 14th inst. In reply to the Official Receiver he said his liabilities were 863*l.* 13*s.* 10*d.*, and assets 544*l.* 2*s.* 8*d.* He commenced business in Mansfield in 1881, and at that time he considered he was worth 2,000*l.* He had been dealing in stocks and shares, and estimated that during the time he had been in Mansfield he had lost 1,200*l.* out of the 2,000*l.* he started business with. An account for one quarter showed transactions to the extent of 7,711*l.*, and a balance against him of 420*l.* Other money had been lost by bad trade. The examination was closed.

Re H. WRIGHT, 9 Derby Street, Great Horton, and 9 Commercial Buildings, Bradford, Chemist.

THIS debtor's statement of affairs was laid before a meeting of creditors, held on the 14th inst., at the office of the Bradford Official Receiver. The liabilities were returned at 773*l.*, and the assets at 464*l.* The Official Receiver stated that the debtor's business had for some time been conducted at a loss, and he had borrowed money at a high rate of interest. The petition had been filed in consequence of the landlord having entered into possession for arrears of rent, and the sheriff's officer enforcing a judgment issued in the suit of a person who had lent money to the debtor. The Official Receiver was authorised to wind up the estate.

Re G. W. L. NEWMAN, 21 Fenchurch Street, E.C., Colonial Merchant.

THIS debtor commenced business last December, and has speculated largely in shellac, pepper, and similar goods, with the result that he filed his petition on July 29. His accounts show total liabilities 4,281*l.* 9*s.*, of which 4,180*l.* 16*s.* 11*d.* are expected to rank against assets valued at 182*l.* 13*s.* 5*d.*

Mr. Marshall attended the first meeting of the creditors, held last Wednesday, before Mr. Hough, Official Registrar, and stated that his client was unable to submit any offer. The chairman asked respecting a proof for 200*l.* tendered by a creditor. In reply the debtor said he purchased 200 chests of shellac for 474*l.* 10*s.* 7*d.*, for future delivery. He afterwards resold them to the vendor, being unable to take up the purchase, and the proof was in respect of differences on that and other dealings. The chairman said the case was a very bad one, and the statement of affairs was most unsatisfactory. At the public examination the transaction will be inquired into at length. A summary order had been made, and as there was no offer, the case would remain in his hands, and be wound up in the usual course of bankruptcy. The bankrupt was in business in Hamburg some years ago, as a coffee-broker, but came to England in September, 1889. He acted as clerk for a few months, then traded for a short time in partnership with another, and, finally, in November or December, 1890, he commenced business as a colonial merchant and agent, at 21 Fenchurch Street. He attributes his failure to losses on colonial produce markets, bad debts, and a breach of contract. The principal creditors are:—

Unsecured.

	£	*s.*	*d.*
Barber, E., & Co., 32 Fenchurch Street, E.C. ..	675	0	0
Bove, C. J., Hamburg	75	0	0
Bullery, R. F., Bishopsgate Street Within	150	0	0
Figgins, S., & Co., Fenchurch Street, E.C... ..	210	0	0
Garrard & Sons, Mincing Lane, E.C.	34	0	0
Hescheel, H., Hamburg	190	0	0
Johnson, Rolls & Co., Mincing Lane, E.C.	41	10	11
Levy, Sam., Hamburg	40	0	0
Lewis & Peat, Mincing Lane, E.C.	55	0	0
Marshall, F., Lincoln's Inn Fields, W.C.	150	0	0
Miller & Tindal, 21 Mincing Lane, E.C.	280	0	0
Pausman & Wex, Povenshof	305	0	0
Price, Hichman & Co., 17 Mincing Lane, E.C. ..	265	0	0
Sargent, W. T., & Son, 6 Mincing Lane, E.C. ..	125	0	0
Schmidt, F., Hamburg	150	0	0
Schnell, P. H., Hamburg	35	0	0
Thompson Bros. & Co., 5 Market Buildings, Mincing Lane, E.C.	525	0	0
Wex, Franz, Kildare Gardens, Bayswater	1,039	7	9

HE WAS A BAD WRITER.—Mrs. Green (to Young Physician whom she has called in haste): "Oh, doctor, doctor, I fear you have made a terrible mistake! My daughter had that prescription which you sent her last night made up, and took a dose of the medicine. Now she exhibits every symptom of poisoning. Oh!——" Young Physician: "Prescription, madam? Why, that was an offer of marriage!"

KIESELGUHR.—The recommendations in THE CHEMIST AND DRUGGIST of this infusorial earth for various pharmaceutical purposes has created considerable demand for it. In their "Therapeutical Notes" Messrs. Evans, Lescher & Webb say of the earth that it is composed of pure silicic acid, with a small proportion of iron. In the natural state it contains, besides this, sand and organic matter. Heated and washed kinds are free from sand and organic matter. The uses of kieselguhr are numerous; its chief properties are the minuteness of the atoms, and the consequent faculty of absorbing great quantities of liquid. Twenty-five parts of kieselguhr absorb seventy-five parts of water.

Personalities.

Dr. R. G. Eccles, the New York analyst whose work on pharmaceutical subjects we have frequently referred to, is an Ayrshire man. He was born in Kilmaurs in 1847, and stayed in Kilmarnock for six years before his parents went out to the States.

Mr. W. R. Wheeler, pharmaceutical chemist, formerly of Upper Norwood, has succeeded to the old-established business of Messrs. J. P. Boyce & Son, Chertsey.

Mr. H. D. Fuge, a past Bell scholar, has taken first-class honours in chemistry in the London University examination for B.Sc. This is the third year in succession that a School of Pharmacy student has secured such a position. Messrs. F. W. Short and R. Bremridge, jun., having figured thus in 1889 and 1890.

Mr. T. Richards, chemist, Treherbert, has conducted a botany class in the town, and all his pupils have just passed the examination of the Science and Art Department.

NEW COMPANIES.

The Medical Hall.—Registered in Scotland, with a capital of 5,000*l.*, divided into 1*l.* shares. Offices at 18 Gilmour Street, Paisley. Object: To adopt and carry into effect an agreement entered into with Thomas Hunter Harrison, chemist and druggist, Paisley, for the purchase and acquisition of the chemical and drug business carried on by him at 18 Gilmour Street, Paisley, and to carry on such business of chemists and druggists as heretofore in the United Kingdom of Great Britain and Ireland and abroad.

Waller & Riley (Limited).—Registered by G. H. Chamberlain, 7 Tokenhouse Yard, E.C., with a capital of 2,000*l.*, in 1*l.* shares. Object: To acquire the undertaking of a wholesale chemist and druggist, lately carried on by F. Dutton (trading as Dutton & Son), at 19 Bradshaw Gate, Bolton, in accordance with an agreement, made July 10, between Francis Dutton of the one part and W. Waller and A. T. Riley of the other part, and to carry on the business of a wholesale and retail chemist in all its branches. Most of the regulations contained in Table A apply.

Jolly Mineral-water Company (Limited).—Registered by Jordan & Sons, 120 Chancery Lane, W.C., with a capital of 3,000*l.*, in 1*l.* shares. Object: To acquire the undertaking of a mineral-water manufacturer, now carried on at Rupert Street, Bolton, Lancashire, and to carry on and extend such business generally. There shall not be less than five nor more than seven directors. The first are: S. Snape, A. Lumb, A. Taylor, T. Harper, R. Hampson, J. Walkden, and J. Barrow. Qualification, 30*l.* Remuneration to be determined in general meeting.

TRADE-MARKS APPLIED FOR.

The *Trade Marks Journal* publishes the following notice:—"Any person who has good grounds of objection to the registration of any of the following marks may, within one month of the date of this journal give notice in duplicate, at the Patent Office, in the form 'J,' in the second schedule to the Trade Marks Rules, 1890, of opposition to such registration." All communications to be addressed to H. Reader Laok, Esq., Comptroller General, at the Patent Office, 25 Southampton Buildings, Chancery Lane, London, W.C.

(*From the " Trade Marks Journal," August* 5, 1891.)

"Health and Healing," and circular design with hand holding arrow; for horse, sheep, and cattle oils. By Osmond & Son, 33 Jewry Street, London. 157,402.

"Calista"; for medicated articles and patent medicines. By T. J. Holland, C.B, Tunbridge Wells. 157,103.

Picturesque design and name of firm; for chemical substances used in medicine and pharmacy. By H. Ahrens & Co., Nachfolger, 17 & 18 Basinghall Street, London. 153,231.

Square design, with monogram draping and crown; for proprietary medicines for human use. By J. Durant, Murray Road, Bedminster, Bristol. 156,446.

"Juvenia," and sketch of a globe with rings; for chemical substances used in medicine and pharmacy; and for toilet soaps. By F. S. Cleaver & Sons, 32 Red Lion Street, London. 157,080, 157,081.

Head of fabulous animal holding twig; for mineral and aërated waters. By G. Hirst, Liversedge, Yorkshire. 153,802.

Ancient shield, with sketch of oared galleys; for aërated waters. By David Carty, 22 & 23 Johnstown, Waterford. 156,764.

(*From the " Trade Marks Journal," August* 12, 1891.)

"Ruomra"; for naphthaline, as a disinfectant and deodoriser. By Stewart Armour and H. C. Tallack, 28 Hatton Garden, E.C. 157,329.

"Mary Dudley's 'Invincible' Pile Pill"; for pills. By Mary Dudley, Kingswinford, Staffordshire. 156,529.

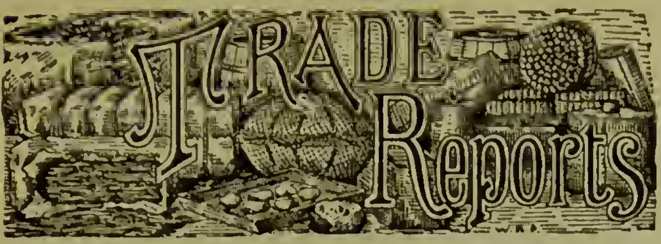
"Phenocoll," on triangular design, with wording; for a chemical compound. By Chemische Fabrik auf Actien vorm. E. Schering, 11 & 12 Fennstrasse, Berlin. 157,131.

"Pambo"; for chemical substances for use in medicine and pharmacy. By J. W. Lang, Teviot Dale Drug Stores, Stockport. 157,282.

Sketch map of British Islands; for mineral and aërated waters. By H. Martindale & Co., Liverpool. 156,757.

Sequah in Holland.—Sequah has got into trouble in Holland. The other day he appeared in the Southern provinces with his caravan, and, after effecting "many wondrous cures," was presented with a testimonial by some of his admirers. The provinces which Sequah traversed are the most backward, in point of education, in the enlightened kingdom of Holland; but in the town of Bergen-op-Zoom, in Brabant, the authorities interfered, with the result that "Charles Devonpost, describing himself as Sequah," has been hauled before the Tribunal on separate counts for illegal practice of medicine and of pharmacy. The case is not yet finished, but the prosecuting authority, who, as is usual under the Napoleonic Code prevailing on the Continent, pressed for a definite penalty, has asked for a fine of 25*l.* or 90 days' imprisonment on the first, and for a fine of 19*l.* or 40 days on the second, count.

Alleged Breach of Contract in Ceylon.—Messrs. W. M. Smith & Co., the proprietors of the Ceylon Apothecaries' Company, have commenced an action for breach of contract of service against a Mr. Plate, whom they engaged in the capacity of photographic artist. The defendant contracted in writing with plaintiffs on April 10, 1888, to serve them for four years at a certain progressive salary, each party stipulating for a penalty, 200*l.* sterling, on breach of the contract. Plaintiffs allege that defendant absented himself from work on March 4, 1890, and though repeatedly requested to return, until March 22 had failed to do so. Plaintiffs claimed 2,823r. (as the equivalent of 200*l.*) as penalty, or, in the alternative, as damages subject to proof of actual loss. The defendant states that he was to receive 250r. a month salary and an allowance for lodgings, and alleges that on March 3 plaintiffs had given notice they would discontinue these extra allowances, and pay only what his written contract provided. Defendant declined, and gave notice that, unless he heard from plaintiffs to the contrary in twenty-four hours, he would accept their notice as giving him the alternative of serving on the smaller salary or being dismissed, and would consider himself dismissed. Plaintiffs had not replied to the contrary. In replication, plaintiffs alleged that the extra allowance had been stopped owing to defendant's misconduct. The case had not concluded when the last Ceylon mail left.



Notice to Retail Buyers:—It should be remembered that the quotations in this section are invariably the lowest net cash prices actually paid for large quantities in bulk. In many cases allowances have to be added before ordinary prices can be ascertained. Frequently goods must be picked and sorted to suit the demands of the retail trade, causing much labour and the accumulation of rejections, not all of which are suitable, even for manufacturing purposes.

It should also be recollected that for many articles the range of quality is very wide.

42 CANNON STREET, August 22.

RUSSIAN QUICKSILVER.—The supply of Russian quicksilver from the mines at Nitikowka on the Kursk-Charkoff-Azoff railway increases rapidly. In 1890 3,686,650 poods ore were treated, yielding 17,835½ poods of pure mercury. In 1887, when the mines were first opened, only 3,911 poods of mercury were obtained; in 1888 10,062¼ poods; and in 1839, 10,202 poods. Most of this is used in Russia, the remainder being exported to Germany.

JAVA CINCHONA DIVIDEND.—The dividend of the Java Cinchona Company "Kertamanah" for 1890-91 has been fixed at 11 per cent. The Kertamanah estate is one of average size. Its yield has increased from 80 to 155 tons in three seasons, and the bark it produces averages from 4½ to 5 per cent. quinine sulphate.

PROPOSED QUININE-FACTORY IN JAVA.—Mr. P. van Leersum, assistant-director of the Government cinchona plantations in Java, has received permission from the Dutch Indian Government to proceed to British India on behalf of the Bandoeng and Soekboemi Agricultural Association for the purpose of investigating the manufacture of quinine in the Indian Government factories, and with the ulterior object of establishing a quinine-factory in Java.

BANKRUPTCIES IN GERMANY.—While the number of failures in this country decreases yearly, that in Germany grows with disquieting rapidity. German official returns show 614 failures in July, 1891, against 524 in July, 1890, and 404 in July, 1889. During the first six months of the last three years the figures were:—1891, 3,723; 1890, 3,119; 1889, 2,682; an increase in 1891 of 38 8 per cent. over 1889, and 19 3 per cent. over 1890.

TURKISH TRADE.—The British Chamber of Commerce in Constantinople, in its fourth annual report, states that the trade of Turkey has developed very largely lately, and promises to grow still more during the coming year, the crops being very good throughout the Empire. A new commercial treaty is now being negotiated between Turkey and England. In view of the difficulties which manufacturers and traders abroad experience in their dealings with firms of doubtful respectability, the board of directors of the Chamber declare their willingness to supply information respecting the standing of firms. Great annoyance is experienced in Turkey by the arbitrary conduct of the native officials in dealing with imports, especially under the law which enables them at their discretion to prohibit imports on the plea of inferiority. In such a case recently a British manufacturer, who had long been in the habit of exporting to Turkey patent boiled oil for the purpose of cleaning ships' bottoms or painting ironwork, heard suddenly and without notice that some shipments of his were stopped at the Constantinople custom-house on the plea that the oil was adulterated with petroleum. The manufacturer not only admitted that an oil akin to petroleum is one of the constituents, but stated that without it the purposes of the oil would not be attained. His plea, however, was of no avail, nor could the British Consul-General do any good, and, after immense trouble, the importer succeeded only in obtaining a permit to return the goods to England.

GOVERNMENT QUININE IN BRITISH INDIA.—The Madras Government are still busying themselves about the distribution of quinine throughout the Presidency, and a further Government order has been issued on the subject. Surgeon-major North is of the opinion that purgative powders should be distributed with the quinine powders, and the purgative to be supplied by Government will be the jalap grown in the Government gardens, Dr. North's proposals having been accepted. Henceforth each packet will contain one purgative powder and five quinine powders, and the cost will be 14·11 3r. per lb, the same as it is for quinine alone. Dr. North's instructions will be printed and enclosed in each packet. These packets are to be supplied only to Government servants. In the North West Provinces during 1890 277 lbs. of cinchona febrifuge and 115 lbs. of quinine were disposed of by the dispensaries.

FRANCE AND THE CHICAGO EXHIBITION.—The Paris Chamber of Commerce has had under consideration a letter from the French Minister of Commerce inviting a statement of the views of the Chamber with regard to the Chicago Exhibition, and has taken the opportunity to administer a neat rebuke to the United States, with characteristic politeness. It was resolved to reply that, as the Government of the Republic, in common with all the principal nations of the world, had accepted the invitation to participate officially in the Exhibition, and as an abstention on the part of French producers and manufacturers might lead visitors to the Exhibition, particularly from South and Central American countries, to believe that France could not compete with the other countries represented at the Exhibition, it is desirable that as many French firms as possible shall be induced to exhibit. But, at the same time, the resolution records the conviction of the Chamber that the recent American tariff legislation, and the condition of the United States laws on industrial, artistic, and literary property, and on immigration, will form serious obstacles to the acceptance by French manufacturers of the American invitation. On these grounds the Chamber invites the Government to use its influence with the United States to obtain, so far as regards the Chicago Exhibition—(1) a considerable relaxation of the McKinley tariff; (2) protection for French trade-marks, and French industrial, artistic, and literary property; (3) relaxation of the American laws on immigration and the engagement of foreign workmen.

THREATENED OPPOSITION TO THE ALKALI UNION.—Opposition to the Alkali Union by the establishment of new works for the manufacture of alkali and bleaching-powder is threatened in various quarters. The establishment of a very large works to manufacture by the Davies process has gone so far that the promoters are now advertising for contractors to construct the necessary plant and buildings. The inventors claim to be able to produce under this process a ton of bleach from 15 cwt. of salt, compared with the 2½ tons used by the Union in the old Weldon process. The Donald process, which has been tried at Glasgow on an experimental scale for some time past, is still in that stage; but the trials have now taken considerably larger proportions, and, as the patentees claim to produce a ton of bleach for a ton of salt, the Union is promised another very formidable competitor. Another concern, alluded to some time ago as about to start in opposition for the purpose of working the ordinary Leblanc process, but which was abandoned owing to the difficulties in securing supplies of salt, now stands in a fair way of being proceeded with, the salt troubles having been overcome. The difficulties of the Union appear to be without end, and so far as soda ash is concerned they are apparently at the absolute mercy of Messrs. Brunner, Mond & Co. This firm is able to produce soda ash at about 50 per cent. less cost than the Union. The prices, however, have so far been kept fairly equal, but it is, nevertheless, true that Brunner's Company could, at any time, hopelessly undersell the larger company in this particular article, and thus drive them out of the market.

ACID (CARBOLIC). — Six casks crystals of fairly good appearance (melting-point not stated) sold to-day, "without reserve," at 3¼*d.* to 3½*d.* per lb.

ACONITE.—Japanese aconite-root is falling in value. Twenty-five bags small *Japanese* root sold at 18*s.* 6*d.* per cwt. to-day. Twenty cases bold *Nepaul* root, from *A. Ferox* were bought in.

ALKANET.—Five bags were bought in at 20*s.* per cwt. to-day. The price asked is 15*s.* per cwt.

ALOES.—Of *Cape* aloes 39 packages were offered to-day. High prices are required, as the supply is exceedingly limited, and only 5 cases sold, at 26*s.* per cwt. for good seconds. Privately 27*s.* per cwt. has been offered for fine hard quality. Hepatic Natal aloes are held for 30*s.* per cwt. Of *Curaçoa* aloes several lots will be offered for sale to-morrow, but they do not include anything of good quality. To-day only 25 boxes low dull and over-heated sold at 9*s.* to 11*s* 6*d.* per cwt. There have been a few consignments of East Indian aloes in skins, but the quality is by no means fine, all packages showing very damp juice, hepatic and red mixed. At to-day's auctions from 30*s.* to 40*s.* per cwt. was paid for such quality, and 52*s.* 6*d.* per cwt. for a rather better lot.

AMBERGRIS.—An excellent demand continues to prevail for ambergris, and for a small parcel of fine grey quality (only 3¼ oz.) an offer of 150*s.* per oz. was refused to-day. Other lots sold at 62*s.* 6*d.* and 70*s.* per oz. respectively.

ANISE.—The new crop of Chinese star-anise is being offered here at 85*s.* per cwt., c.i.f. terms, October-December shipment.

ANNATTO.—Eighty-three bags good dry colour seed, from Ceylon, sold at 2¼*d.* per lb. to-day; another small lot, rather duller, realised 1½*d.* per lb. Seventy-four baskets of what may once have been Brazilian roll annatto (some of it was imported in 1869) were offered without reserve, but only one lot old hard red annatto (1871 import) sold. It brought 5½*d.* per lb.

BALSAMS.—*Copaiba* balsam is dull of sale, and at to-day's auctions 21 two-tin cases thick yellow cloudy balsam, from Panama, were bought in. The owner wants 1*s.* 10*d.* per lb. Six casks good thick Maranham were bought in at 2*s.* 3½*d.* to 2*s.* 5*d.* per lb. A small parcel of unworked *Peru* balsam is held for 5*s.* 6*d.* per lb. The market is quiet, with some little business at 5*s.* 3*d.* to 5*s.* 6*d.* per lb. *Tolu* balsam quiet, and nearest value for good quality is 1*s.* 3*d.* per lb.

BROMINE SALTS.—The progress of the bromine war has been marked to-day by a reduction in the price of English bromide of potassium to 1*s.* 1*d.* per lb., usual terms (a decline of ½*d.* per lb.), so that the Americans are out of it again for the present. Bromides of sodium and ammonium are correspondingly lower. This is what the *Oil, Paint, and Drug Reporter* of August 10 has to say about the progress of the Americo-German bromine hostilities:—"Since the dissolution of the pool at least two manufacturers have purchased car lots of American bromine at 19c. and 22c. respectively, and one of them, who has for some time been out of the business, will probably be able to deliver bromide this week. At the price paid for their bromine these manufacturers could easily undersell the present market and still make money. Since that time, also, some 45,000 lbs. of German bromine have been sold here to arrive at 17¼c. The shipment of bromide to Europe from Baltimore, and the placing of considerable orders from London for American bromide at 1*s.* 2¼*d.* net, c.i.f., show that our expectations of a very interesting fight are being fulfilled. Although German bromide has been offered here very industriously to arrive at 26c. net, delivered, there have so far been no takers, as buyers here look forward to lower figures before any orders placed now could possibly be filled. A rumour was current last week that after accepting orders for 45,000 lbs. or so of bromine at 17½c. net, c.i.f., the Germans instructed their agents to place no more at that figure, from which it may be gathered that the Stassfurt people do not care to punish the American bromine men very severely. It is stated that 1*s.* 1½*d.*, less 5 per cent., has been cabled here as the price at which the English are offering bromide on their home market. At this figure American producers can scarcely compete in the English markets, unless bromine goes even lower here than now."

BUCHU.—The market remains very firm at the recent slight decline, 18 bales selling with good competition—good bright green leaves at 6*d.* to 6½*d.*, yellowish and mixed at 5*d.* to 5½*d.*

CALABAR BEANS.—Lower. A few packages sold at 3¾*d.* per lb. in Liverpool a few weeks ago.

CALUMBA.—Of 264 packages offered to-day, only 16 sold, without reserve, at 17*s.* 6*d.* per cwt. for ordinary brownish and slightly wormy root. Good washed sifted calumba was bought in at 50*s.* per cwt. to-day.

CAMPHOR (CRUDE).—The true position of the market was shown to-day by the sale, "without reserve," of 19 tubs of good fairly dry Japan camphor of recent import, which sold at 125*s.* per cwt. Ten cases (each of two 60-lb. tins), imported *viâ* Hamburg, are held for 130*s.* per cwt., an offer of 125*s.* per cwt. being made.

CANNABIS INDICA is reported to be getting scarce. Five robbins fair green tops, but rather broken, sold at 4½*d.* per lb. Nine bales damaged herb of fair colour were bought in at the same price.

CANTHARIDES.—Russian flies of the old crop are offering at 3*s.* 6*d.* per lb., c.i.f. terms. Six casks were shown at auction. Three of these, of good green colour, but somewhat dusty, are held for 3*s.* 2*d.* per lb., the owner refusing a bid of 3*s.* 1*d.* per lb. Five cases fair *Chinese* flies are quoted at 1*s.* 2*d.* per lb.

CARDAMOMS.—The supply at to-day's auctions was small—only 72 packages; but some parcels stand over until to-morrow. Prices are generally dearer, medium and good qualities realising 2*d.* to 3*d.* per lb. advance. The following prices were paid:—*Mangalore-character*, pale round medium, 2*s.* 6*d.*; small, 2*s.* per lb. (bold are held for 3*s.* 6*d.*); split and specky, 1*s.* 6*d.* per lb. *Ceylon-Mysore*, bold pale round, 3*s.* 5*d.*; medium size, 2*s.* 4*d.* to 2*s.* 5*d.*; small to medium, pale long and thin mixed, 2*s.* to 2*s.* 1*d.*; yellow mixed, 1*s.* 10*d.* to 1*s.* 11*d.*; small yellow and brown, partly split, 1*s.* 5*d.* to 1*s.* 6*d.*; rather better ditto, 1*s.* 8*d.* per lb. *Ceylon-Malabar*, small to medium, good plump yellow, 2*s.* 3*d.* to 2*s.* 4*d.*; very small round, 1*s.* 3*d.* to 1*s.* 5*d.*; split dull brown specky, 1*s.* 6*d.* per lb. *Seeds* sold very high, at 2*s.* 2*d.* per lb. The exports of cardamoms from Ceylon in the period between January 1 and July 20 have been as follows:—1891. 175,009 lbs.; 1890, 194,293 lbs.; 1889, 165,601 lbs.; 1888, 166,497 lbs.

CASCARA.—The tendency of the market is by no means brisk. At to-day's auctions about 5 tons (130 bales) good quilly mixed silvery cascara were offered, but the owners only succeeded in disposing of half a ton at 25*s.* per cwt. From America it is reported that the holders in the Western States have at last given way, and accepted lower prices, at which several sales have been made. The American quotation is 30*s.* per cwt., c.i.f. terms.

CASCARILLA.—Several lots were offered, but only 2 packages sold at 19*s.* 6*d.* per cwt. for very thin rather damaged bark.

CASSIA FISTULA.—For 39 bags fair pods (West Indian) 16*s.* per cwt. is required.

CHAMOMILES.—There is nothing new to report yet about the Belgian crop, which is late, and likely to bring high prices.

CHILLIES.—Eighteen bales (only ½ cwt. each) good bright Sierra Leone chillies sold at 60*s.* per cwt. to-day. The new crop was announced by the broker to be "as black as your hat." The market remains very dull, and at the auctions 50 bales dark brown *Zanzibar* were bought in at 40*s.* per cwt. A parcel of 143 bales fine bright long Japanese *Capsicums* on stalk sold at 13*s.* to 13*s.* 6*d.* per cwt.

CHLOROFORM.—The convention of German chloroform manufacturers, which has hitherto succeeded in keeping the quotations for chloroform at a high level, has lately been greatly disturbed by the new firm which has appeared as a competitor on the German market, and offers chloroform (presumably prepared by a new process) at a price very much below that of the combination. The dealers, who hold large stocks, as under the combination rules they were compelled to purchase large quantities in order to secure the lowest price, are also much affected.

CLOVES are selling privately in a small way at 3¼*d.* per lb. for fair *Zanzibar* on the spot. At auction 2⅞*d.* was paid for common dark, and $3\frac{5}{16}$*d.* per lb. for good cloves. Fine bright selected *Penang* cloves sold at 1*s.* 3½*d.* per lb.

COCCULUS INDICUS.—The price is still rising slowly. At to-day's sales, 20 bags realised 11*s.* per cwt.

COCHINEAL.—The market is higher, with more inquiry. For silver cochineal, which is scarce, 1*s.* 1*d.* to 1*s.* 2*d.* per lb. has been paid, and fair to good blacks have changed hands at the same price.

COLOCYNTH.—Nine cases very broken seedy and greenish apple sold at 7*d.* per lb, subject to approval. Good Turkey colocynth is very dull of sale.

COWHAGE.—Desperately neglected. A small box rather seedy mixed sold at 1*d.* per oz. to-day.

CUBEBS.—Four bags small and slightly mouldy berries, free from stalk, imported *viâ* Singapore, sold at 8*l.* 5*s.* per cwt. For another lot, fair small stalky berries from Batavia, 9*l.* 5*s.* is wanted.

CUMIN-SEED.—For 33 bags *Malta* cumin, 27*s.* per cwt. is the price. *Mogadore* dearer, and held for 20*s.* per cwt. The locusts are blamed for this rise.

DRAGON'S-BLOOD.—Thirteen cases were shown to-day, and all bought in. For fine soft fiery saucers 8*l.* 10*s.* is asked, and an offer of 8*l.* 7*s.* 6*d.* was refused; dull bricky saucers were bought in at 5*l.* 10*s.* per cwt.

ERGOT OF RYE.—Russian ergot of the new crop is said to have been sold privately at 1*s.* 6½*d.* per lb., and further orders are solicited at that figure. Several parcels of Spanish were bought in to-day. Good quality is held for 1*s.* 6*d.* per lb., but wormy sweepings sold at 11*d.* per lb.

FENUGREEK SEED.—In common with most Mogadore produce this article is reported to be tending higher. From 8*s* 6*d.* to 10*s.* per cwt. is quoted, according to quality.

GALLS (TURKEY).—There has lately been a strong demand for Bassorah galls, which have been dealt in at 58*s.* to 59*s.* for blue, 47*s.* to 52*s.* 6*d.* for green, and up to 47*s.* per cwt. for white galls. Holders have since asked higher prices, which has had the effect of stopping business.

GAMBOGE.—To-day's supply consisted of 20 cases, nearly all of which sold at steady prices: Good bright, loose picked orange pipe, at 13*l.*; fair colour, broken and partly blocky pipe, at 12*l.* 2*s.* 6*d.*; darker ditto, 11*l.* 2*s.* 6*d.*; ordinary broken dull ricey Saigon pipe, 10*l.* to 10*l.* 10*s.* per cwt. For low ricey lump bids of 8*l.* 15*s.* were refused.

GENTIAN.—Nine bales fair bright root from Marseilles sold at 16*s.* per cwt.

GINGER.—*Jamaica* ginger is being somewhat pressed for sale, and the bulk of the 188 barrels offered at auction sold at 48*s.* 6*d.* to 52*s.* for low medium to medium, and 42*s.* 6*d.* to 45*s.* 6*d.* for ordinary to good common. *Cochin* remains dull of sale; about 450 packages offered at auction were all bought in.

GLYCERINE.—Market steady; prices unchanged, at 55*l.* to 60*l.* for double distilled, s.g. 1·260, from the makers.

GUM ARABIC.—The acacia gum offered at to-day's auction comprised an unusually large supply of fine soft *Cape* gum—viz., 71 bags, which were nearly all sold at full prices with excellent competition. Good pale clean, soft sifted gum realised 8*l.* 12*s.* 6*d.*; partly ambery soft palish sorts, 6*l.* 2*s.* 6*d.*; good pale soft dusty sorts, 85*s.* to 87*s.* 6*d.*; small to brownish mixed, 65*s.* to 70*s.*; pickings and dusty brown gum from 34*s.* to 47*s.* 6*d.* per cwt. *Soudan* gums are also offered more freely. One bale bold pale picked Alexandrian sold at 17*l.* 5*s.*; smaller and yellower at 10*l.* 12*s.* 6*d.* to 13*l.* White *Mogadore* sorts are quoted at 4*l.* 10*s.* to 5*l.*, fine picked up to 9*l.* per cwt.

GUM BENZOIN.—This drug was in very large supply to-day; but the demand was exceedingly slack and prices were lower, especially for Sumatra benzoin. A new consignment of Siam gum, which was shown, included some very fine bright bold almonds, slightly blocky, for which 20*l.* was refused. The sales of *Sumatra* benzoin comprised slightly false packed, good white almondy centres at 7*l.* 15*s.*; ditto, rather more false packed, with red sides, at 6*l.* 7*s.* 6*d.* to 6*l.* 12*s.* 6*d.*; and ordinary dull old fractured thirds at 100*s.* per cwt. A parcel of 28 cases fair partly almondy Penang sold at 70*s.* to 72*s.* 6*d.* per cwt. Palembang gum was all bought in, fine almondy in small tins, at 57*s.* 6*d.* per cwt.

GUM GALBANUM.—Of 3 packages spurious orange galbanum, from Aden, one was sold to-day at the rate of 20*s.* per cwt.

GUM GUAIACUM.—There have been several arrivals lately, and our market is now well supplied. The better part of the parcels declared for this week's sales will not be offered until to-morrow. Ten cases slatey gum from New York were bought in at 1*s.* 2*d.* per lb. Fine quality is worth up to 2*s.* 4*d.* per lb.

GUM MASTIC.—Five cases pale straw drop sold, without reserve, with good competition, at 2*s.* 1*d.* to 2*s.* 2*d.* per lb. In Smyrna the market remains very dull. The new crop will be placed on the market here at the end of August. In the meantime the news regarding it is exceedingly satisfactory.

GUM MYRRH.—In large supply. The demand, however, remains good, and prices are fairly well kept up. Good pale sorts solid to-day at 72*s.* 6*d.*, coarse siftings at 60*s.* to 62*s.* 6*d.*, pickings at 40*s.*, and small siftings at 33*s.* per cwt.

GUM SANDARACH.—Fine qualities are dearer, but all other grades are cheaper. Prices range from 90*s.* to 100*s.* per cwt. for fair to good pale.

GUM TRAGACANTH.—The new crop of tragacanth will commence to be available on the markets towards the end of the month.

HONEY.—A good deal of buying in Chilian honey is going on in Liverpool, but dealers are keeping very quiet about particulars. Twenty-seven packages Jamaica honey sold with good competition at about 1*s.* per cwt. advance—good clean brown liquid at 37*s.* to 37*s.* 6*d.*: darker at 32*s.* to 32*s.* 6*d.*; partly candied rather dirty orange, at 28*s.* 6*d.* per cwt. For 5 tierces clean brown thin Cuba honey, 25*s.* per cwt. will be submitted. Chilian honey in demand, fair pale grey candied at 32*s.* 6*d.* to 34*s.* 6*d.*; yellow, at 28*s.* 6*d.* to 29*s.* 6*d.* Mexican honey is also in request at 6*d.* to 1*s.* advance—ordinary brown fermented, 22*s.* 6*d.* to 23*s.* 6*d.*; cleaner up to 24*s.* Eighteen cases Mexican comb honey were bought in at 60*s.* per cwt.

IPECACUANHA.—Of a total of 65 bales, only 30 were reached to-day. The demand remains good, and holders succeeded in maintaining the former price to the full, 18 packages selling at 7*s.* 11*d.* to 8*s.* per lb. for fair partly stout sound root, one fine lot realising 8*s.* 3*d.*; and 7*s.* 9*d.* to 8*s.* per lb. for first-class damages.

JALAP.—A fairly large supply will be offered to-morrow, but most of it is damaged. Privately the market has been somewhat higher, with sales of fair Vera Cruz at 1*s.* 2*d.* per lb. In New York also prices are hardening, and the supply is becoming smaller.

KOLA.—The 23 packages offered, and mostly sold, to-day included some well-dried brown Grenada kolas, for which 1*s.* to 1*s.* 3*d.* per lb. was paid; fair, rather mouldy, realised 6*d.* to 6½*d.*; low, mouldy and wormy, 1*d.* to 2½*d.* per lb.

LIQUORICE-ROOT.—Persian root has been in rather small supply lately. At to-day's drug-sales, however, about 300 bales were shown, and partly disposed of—good decorticated at 31*s.* to 34*s.*, dusty and damaged natural at 9*s.* to 12*s.* per cwt.

MERCURIALS.—Prices remain unaltered, upon the basis of 3*s.* 2*d.* per lb. for calomel from the English makers. French mercurials are being offered at 2*d.* per lb. less all round.

MORPHIA.—The market remains steady at 3*s.* 9*d.* per oz. for hydrochlorate in crystals.

MUSK.—*Tonquin* pod musk was in fairly large supply at to-day's auctions, but only one caddy first pile sold, and that "without reserve," at 46*s.* per oz. for hard, very skinny, badly-trimmed dry pods. There was no reply at 77*s.* 6*d* per oz. for fine blue-skin pods. Several tins *Yunnan* pod musk without underskin, in small dark pods and very damp, sold at 36*s.* per oz. Of *Cabardine* pods, 5 tins Chinese sold at 15*s.* 6*d.* to 16*s.*; 2 tins Russian at 15*s.* per oz.

NUTMEGS have advanced in price, a considerable speculative demand having sprung up. *West Indian* sold at auction at 2*s.* 5*d.* to 2*s.* 2*d.* for 109's to 86's; *Penang*, at 3*s.* 3*d.* for 63's; 2*s.* 9$\frac{1}{2}$*d.* to 2*s.* 9*d.* for 76's to 81's; 1*s.* 2*d.* to 1*s.* 4*d.* per lb. for small and shrivelled.

OIL (CASTOR.)—In Liverpool large arrivals have created a somewhat easier feeling. Good Calcutta seconds have sold at 3$\frac{1}{16}$*d.* per lb., but for French oil of first pressure 3*d.* to 3$\frac{1}{16}$*d.* per lb. ex quay is still asked. Under date of July 20 we hear from Calcutta that the production of castor oil has been much interfered with by the rains which have set in. Stocks are light, and prices keep steady. Castor-seed for crushing also has been arriving in much smaller quantities than was anticipated with the opening of the canals. It is too early yet for any reliable news with regard to the coming crop, but it is thought that the prolonged drought in the Madras presidency may have injured the growing plants considerably. A parcel of 121 cases good yellow Coconada sold to-day, with good competition at 3$\frac{1}{4}$*d.* per lb. For some two or three weeks French castor oil has been offered by a firm of agents in London at a figure below that of the existing combination of French manufacturers.

OIL (COD-LIVER).—The market has improved somewhat, and we hear of sales of old non-congealing oil at 70*s.*, while new oil is held for 80*s.* per barrel.

OILS (ESSENTIAL).—The principal event of the week in the essential-oil market has been the rise in *Otto of rose.* The price of that important article has at last been fixed by the Constantinople houses, who quote an advance of from 5*s.* to 5*s.* 3*d.* upon last year's rates, the leading brands being worth to-day about 24*s.* per oz., London terms. Good quality oil of the old crop has been sold at 21*s.* per oz. News from Italy reports a fresh advance in oils of *Orange* and *Bergamot*, and makers do not care about selling. They talk of 15*s.* for. bergamot. *Citronella* oil in tins is held for $\frac{11}{16}$*d.* per oz Fisher's *Patchouly* oil was to-day quoted at 1*s.* 3*d.*, ditto *Nutmeg* oil at 8*d.* per oz, and ordinary brands of nutmeg oil at 5*d.* per oz. American oil of peppermint, HGH, is quoted at 13*s.* 6*d.* per lb.; Japanese oil of camphor at 30*s.* per lb. One case *Bay* oil for Dominica sold at 10*s.* per lb.

OPIUM.—The demand for manufacturing opium continues, and further sales are reported at last week's quotations. First quality selected is held for 10*s.* to 10*s.* 6*d.*, seconds at 9*s.* to 9*s.* 6*d.* per lb. Druggists' opium, according to quality, 8*s.* to 9*s.* 6*d.* per lb. Persian is somewhat neglected, and held at 11*s.* 6*d.* per lb. for good quality. Smyrna reports dated August 8 state that the arrivals of new opium up to date amounted to 1,252 baskets, against 408 baskets in the preceding year. The American buyers, it is said, have ceased to operate, and most of the sales have been for account of local speculators. The market remained very firm, but there is a strong feeling that this firm tendency cannot last long, as the stock in Smyrna continues to accumulate, and the bulk of it is being pawned by the owners to banks, who advance 60 per cent. on the value; in the meantime the drug becomes loaded with charges and interest. The Persian crop, it is said, will reach 5,000 cases this year, against 4,000 in 1890. It will be ready for shipment at Bushire in August and September.

ORRIS.—The disquieting reports concerning the coming Italian crop have caused the market to advance, and at to-day's auctions 20 bales picked pale *Florentine* root realised the high figure of 107*s.* 6*d.* per cwt. Fifty-seven packages yellow mixed root were bought in at 60*s.* to 65*s.* per cwt., and 6 bags common lean Mogadore at 20*s.* per cwt.

QUASSIA.—New wood (in logs) is selling privately at 80*s.* per ton, which is lower. For sale to-day 40 tons were all bought in.

QUICKSILVER.—The importers' quotation remains unaltered at 7*l.* 10*s.* per bottle, second-hand holders quoting 7*l.* 9*s.*

QUINCE-SEED.—Twelve bags Cape seed sold at 7*d.* per lb. for good, and 6*d.* per lb. for cakey.

QUININE.—The market has declined further, and 10*d.* per oz. was accepted for German bulk on the spot early in the week, since when about 100,000 oz. have changed hands at that figure. A sale of 10,000 oz. for November/December is also reported, at 10$\frac{1}{4}$*d.* per oz.

RHUBARB.—The demand is rather restricted, and prices show no change. Of 194 cases offered to-day, only 23 sold as follows:—Shensi: Small to medium, flat, fair coat, half pinky, half dark fracture, 1*s.* 3*d.* per lb. Canton: Flat medium to bold good, three-quarters pink, one quarter dark, loose fracture, 1*s.* 3*d.* per lb. High-dried: Small to medium, flat, fair coat, even pinky grey fracture, 1*s.* 1*d.* to 1*s.* 2*d.*; dull ditto, 1*s.*; wormy pickings, 11*d.* per lb.

SARSAPARILLA.—Grey Jamaica remains well inquired for at low rates—1*s.* 3*d.* for sound, 1*s.* 2*d.* to 1*s.* 3*d.* for damaged. To-day 28 bales sold. Good red Jamaica (native) brought 1*s.* 4*d.*, common 11*d.* to 1*s.* per lb. Some good Honduras root has been sold privately at 1*s.* 6*d.* per lb. recently.

SENNA.—There was a large supply of Alexandrian senna at to-day's auctions, and of 126 packages 32 sold at high prices: bold green leaf, 1*s.* to 1*s.* 4*d.* per lb. (2*s.* is asked for very fine leaves); small and crushed, 9*d.* down to 3$\frac{3}{4}$*d.* per lb. Pods in strong demand at high prices—viz, 11$\frac{1}{2}$*d.* to 1*s.* per lb. Of Tinnevelly senna 165 packages offered to-day, including, it is said, some of the new crop. High prices were paid—$\frac{1}{2}$*d.* to 1$\frac{3}{4}$*d.* for very low to small yellow dull mixed, 2*d.* to 3$\frac{3}{4}$*d.* for ordinary to medium greenish, and from 4*d.* up to 8$\frac{3}{4}$*d.* per lb. for fair to good bold green leaves. The new crop is said to be only one-third of last year's, and it is said that this season no senna will be shipped directly to America, an innovation which was largely resorted to last year.

SHELLAC.—At Tuesday's auctions 400 out of 1,072 cases shellac sold at a decline of 1*s.* on garnet, and 1*s.* to 2*s.* on orange and button lac. The market has since been very quiet.

STROPHANTHUS.—Kombé seed is more plentiful now. Fair green is said to have been sold privately at 7*s.* 6*d.* per lb., but at to-day's auctions 7*s.* per lb. was not obtainable for 4 bags of good clean quality. West African seed moves off slowly at 1*s.* to 1*s.* 6*d.* per lb.

TAMARINDS.—Eighteen barrels Barbadoes, rather dry, sold without reserve at 7*s.* to 8*s.* per cwt. The market shows no improvement, and with very little demand. Only 8 barrels Trinidad sold at the spice auctions at 7*s.* per cwt.

TEA.—The market for common Congou shows a distinct hardening this week, and terminal market quotations are up two or three points. Better grades of Moning are, however, easier, and importers are pushing off their holdings of fine and medium Minchows and Kintucks, in consequence of the adverse exchange with Russia checking shipments from this country. New Kaisows are coming in more freely, but continue very poor, though the two best chops of Soomoos have been sold recently at 1*s.* 1*d.* to 1*s.* 2*d.* per lb. Assams are generally unchanged; but competition is keen for what really good liquoring new teas arrive as yet. Finer grades of broken Pekoe and broken orange Pekoe show good appearance, and in some cases very good liquor, and these are taken readily enough for Ireland. A very heavy sale of 22,000 packages Ceylon lasted 4$\frac{1}{2}$ hours on Tuesday, but went off well for common and medium sorts, and finer teas, which are now rather more plentiful, were all wanted, and sold at very full prices.

TONQUIN BEANS.—Reports of the Angostura crop are decidedly unfavourable. It has now practically all been gathered in, and according to some accounts amounts to only 14,000 or 15,000 lbs., against 140,000 to 150,000 lbs. in former years. Nearly all of this which has reached the New York market has passed into firm hands, who also control much of the old New York stocks. A few cases small black, partly foxy Pará sold at 2*s.* 6*d.* per lb. Good bold Pará are held for 4*s.* per lb.

TURMERIC.—The market is still advancing, and supplies are very small. For fair *Bengal* root, 17*s.* per cwt. has been paid; for good, somewhat mixed *Madras* finger, 19*s.* 6*d.* to 20*s.* 6*d.*; and for split *Cochin* bulbs, 11*s.* 6*d.* per cwt.

WAX (BEES').—Prices were very irregular to-day, but on the whole Jamaica wax is slightly, and Madagascar about 7*s.* 6*d.* to 10*s.*, lower. Very fine red Jamaica realised 8*l.* to 8*l.* 5*s.*; good yellow and orange, 7*l.* 10*s.* to 7*l.* 15*s.*; chocolate and ordinary grey, from 7*l.* 7*s.* 6*d.* down to 6*l.* 10*s.* per cwt. Seventy packages were offered, and all sold. Of Madagascar wax a small supply sold at 5*l.* 10*s.* to 6*l.* 2*s.* 6*d.* per cwt.

CHEMICALS IN THE NORTH OF ENGLAND.

THE Liverpool market for heavy chemicals is a trifle stronger this week, with more inquiry, the only exception being sulphate of copper, which is decidedly flat. The Newcastle market continues steady, but quiet.

BICARBONATE OF SODA quoted 6*l.* 15*s.* to 7*l.* per ton, according to quality, less 2½ per cent. discount, f.o.b. Liverpool.

BLEACHING-POWDER.—Firm at 8*l.* per ton, f.o.b. Liverpool, and 7*l.* 10*s.* per ton, f.o.b. Tyne, for hardwood casks; 7*l.* 5*s.* per ton, f.o.b. Tyne and Liverpool, for softwood casks, and 7*l.* 2*s.* 6*d.* per ton, free on rails, at Widnes and St. Helens.

CAUSTIC SODA.—Steady at 11*l.* 15*s.* to 12*l.* per ton for 74-per-cent., 10*l.* 15*s.* to 11*l.* per ton for 70-per-cent., 9*l.* 10*s.* to 9*l.* 15*s.* for 60-per-cent. white, and 9*l.* 5*s.* to 9*l.* 10*s.* per ton for cream 60–62-per-cent., according to quantity, f.o.b. Liverpool. Newcastle 77-per-cent. quoted 12*l.* 5*s.* per ton, and 70-per-cent. 11*l.* per ton net, f.o.b. Tyne.

CHLORATE OF POTASH.—Firm, and unchanged in price: 5⅝*d.* per lb., less 5 per cent., f.o.b. Liverpool; and 5½*d.* per lb., less 6 per cent., f.o.b. Tyne.

HYPOSULPHITE OF SODA.—Unchanged at 7*l.* per ton in casks, and 7*l.* 10*s.* per ton in kegs, net cash, in parcels of 10 tons, f.o.b. Tyne.

SODA ASH.—Steady at 1⅝*d.* per degree for 48–56-per-cent. carbonated, less 4 per cent. f.o.b. Tyne; 5*l.* 7*s.* 6*d.* per ton for 48-per-cent.; 5*l.* 16*s.* 3*d.* per ton for 52-per-cent.; and 6*l.* 10*s.* per ton for 58-per-cent. carbonated, f.o.b. Liverpool. Caustic 48-per-cent. and 52-per-cent., 5*s.* per ton less than carbonated ash.

SODA CRYSTALS.—Quiet at 3*l.* 5*s.* to 3*l.* 10*s.* per ton in 3-cwt. barrels, f.o.b. Liverpool, with an allowance of 5*s.* per ton if taken in bags; 2*l.* 15*s.* 6*d.* per ton, gross weight, in casks; and 2*l.* 15*s.* 6*d.* per ton in bags, net weight, f.o.b. Tyne.

SULPHATE OF COPPER.—Flat, and quoted 15*l.* 5*s.* per ton for prompt, less 5 per cent., f.o.b. Liverpool.

SULPHATE OF SODA.—Quoted 40*s.* to 42*s.* 6*d.* per ton in bulk on rails at makers' works Widnes or St. Helens; 40*s.* per ton in bulk and 50*s.* per ton, ground and packed in casks for export, f.o.b. Tyne.

THE DUTCH MARKET.

AMSTERDAM, August 13.

CINCHONA.—The cinchona bark sales, which will be held in Amsterdam on September 3, 1891, will consist of 2,686 bales and 199 cases, about 246 tons bark, among which from Government plantations, 278 bales 77 cases, about 29 tons; from private plantations, 2,408 bales 122 cases, about 217 tons. The bark is composed as follows:—*Druggists' bark*: Succirubra quills, 178 cases; broken quills and chips, 102 bales 6 cases; root, 42 bales. *Manufacturing bark*: Officinalis broken quills and chips, 30 bales; Ledgeriana quills, 3 cases; broken quills and chips, 1,565 bales; root, 648 bales; hybrid quills, 12 cases; broken quills and chips, 182 bales; root, 117 bales. Total, 2,686 bales 199 cases.

VASELINE is a good shaving-cream. The beard is said to be rendered as soft as when soap is used, and there is no resulting irritation of the skin.

THE NEW RUSSIAN CUSTOMS TARIFF.

THE following is a statement of the import duties now leviable in Russia on the principal articles of British produce or manufacture. This tariff came into force on July 13, 1891:—

Tariff Classification	Tariff Rates of Duty	English Equivalents
CHEMICALS:—	Poud R. c.	Cwt. £ *s.* *d.*
Alkali:		
Carbonate of soda and carbonate of potash	0 55	0 5 5
Bicarbonate of soda and bicarbonate of potash	0 90	0 8 10
Caustic soda, crude	0 90	0 8 10
" " purified	4 00	1 19 5
Alum:		
Alum, crystallised	0 30	0 2 11½
" calcined or in powder ..	0 35	0 3 5½
Arsenic, white	0 55	0 5 5
Barytes:		
Sulphate of baryta	1 00	0 9 10
Caustic baryta	1 20	0 11 10
Bleaching-materials:		
Chloride of lime and bleaching-liquid	0 70	0 6 10¾
Chromate of potash..	2 65	1 6 1
Borax, refined	1 20	0 11 10
Brimstone:		
Crude:		
Imported at Baltic ports, or at ports in the Government of Archangel, or across the western land frontier	0 02	0 0 2¼
Imported at ports of the Black Sea or Sea of Azov	0 05	0 0 6
Refined, and flowers of sulphur ..	0 20	0 1 11¾
Copperas:		
Green copperas	0 22	0 2 2
Other kinds	1 00	0 9 10
Epsom salts	0 15	0 1 5¾
Sal-ammoniac	1 35	0 13 4
Saltpetre:		
Nitrate of potash	0 65	0 6 5
" soda	0 06	0 0 7
PERFUMERY:—		
Perfumed waters without admixture of alcohol—as rose-water, orange-flower water, cherry-laurel water, &c.	5 30	2 12 2
Perfumed spirits (eau de Cologne and other), toilet-vinegar, rouge and other face-powders, pastilles, hair-dyes, and cosmetics not otherwise enumerated (including the weight of the wrapper or case)	16 00	7 17 7
Perfumes of other kinds; also pomatum..	35 00*	17 4 9†
Toilet-soap	7 20*	3 10 11†

* Poud gross. † Cwt. gross.

ENGLISH AND AMERICAN GRANULAR PREPARATIONS.—The English manufacturers have, writes Mr. W. T. Thackery in the *Pharmaceutical Era*, for a long time held the palm for perfection in granular effervescent salts, both as to the volume of carbonic dioxide contained and also as to their superior keeping qualities. Of late years several American manufacturers have entered the field in competition with English, but their product has not and cannot displace the more perfect European salt, for the reason that the process of manufacture is faulty and a loss of carbonic dioxide and permanency is the result. By the American process advantage is taken of the fact that none of the salts generally used are soluble in alcohol, and those which are soluble must of necessity be rejected. To the alcohol is added a very heavy sugar syrup to assist in the more expeditious formation of granulations. The tartaric-acid formula is exclusively used for these reasons: first, economy—tartaric-acid costs less than citric; second, mechanical—the tartaric acid is more easily reduced to and kept in powder; and, third, because the citric acid is soluble in alcohol. In practice the powders are mixed after being dried as in the English process; they are now treated to a bath of the alcohol and syrup sufficient to dampen, and the mass is then stirred vigorously until the granulations form, which are passed through a No. 6 sieve and dried quickly. By this process there is a loss of from 3 to 5 per cent. of carbonic-acid gas.

Correspondence

Memoranda for Correspondents.

Always send your proper name and address: we do not publish them unless you wish: if you do not, please use a distinctive nom-de-plume.

Write on one side of the paper only; and devote a separate piece of paper to each query if you ask more than one, or if you are writing about other matters at the same time.

If you send us newspapers, please mark what you wish us to read.

Ask us anything of pharmaceutical interest: we shall do our best to reply.

Before writing for formulæ consult the last volume, if you have it.

Letters, queries, &c., will be attended to in the order received.

The Methylated Spirits Order, Dated July 20, 1891.

SIR,—Several communications have been sent to me under the impression that, when chairman of the Chemical Committee of the London Chamber of Commerce, my experience of Somerset House officials would enable me to answer certain important questions regarding the recent order, which may be formulated thus:—

1. Can a wholesale druggist who uses methylated spirits for the production or manufacture of certain preparations allowed by the regulations also keep and retail the new mineralised methylated spirit?

2. Can a manufacturer of ether, chloroform, and other allowed preparations keep stock of both kinds of methylated spirit?

The answer in both cases is "yes," provided he is an authorised user and retailer of methylated spirits.

I am both an authorised "user" of and a "retailer" of methylated spirits, and the uncertainty arising in some cases from reading clauses 3 and 5 too literally will be removed by the following replies to communications of mine received from Somerset House, and which were suggested by the correspondence referred to:—

No. 1.

Inland Revenue Office,
Somerset House, London, W.C.,
August 8, 1891.

Sir,—In reply to your letters of the 5th and 6th instant, I am directed by the Board of Inland Revenue to acquaint you that the General Order to which you refer relates solely to methylated spirit for sale by retail, and therefore does not affect you as an authorised user only.

I am, Sir, your obedient servant,
ROBERT MICKS,
Secretary.

Mr. Thomas Tyrer.

No. 2.

Inland Revenue,
Somerset House, London, W.C.,
August 14, 1891.

Sir,—In reply to your letter dated the 10th instant, I am directed by the Board of Inland Revenue to acquaint you that if you retail and also use methylated spirits, separate stocks must be kept; and only that specially prepared in accordance with the regulations for sale by retail must be sold by you as retailer.

I am, Sir, your obedient servant,
ROBERT MICKS,
Secretary.

Mr. Thomas Tyrer.

Your readers will remember the papers read by Mr. D. B. Dott, of Edinburgh, at the meetings of the Society of Chemical Industry, and reported in THE CHEMIST AND DRUGGIST. He has long urged that users of methylated spirits for certain manufacturing purposes should be either allowed exceptional privileges or permitted to use a "better" spirit. In communications on this current matter, he urges the desirability of persuading the authorities to grant the use of a finer quality of spirit (methylated) on the ground that a "deteriorated" spirit is now to be compulsorily sold to retailers. Mr. Dott even suggests "purification" to a certain extent of methylated spirits for certain purposes—of course under restrictions. This, I feel sure, will not yet be permitted, although the former might; and he and manufacturers may be quite sure that the Chemical Committee of the London Chamber of Commerce (of which I am not now chairman), which has done good work, will not let the matter drop without anxious consideration.

Stirling Chemical Works, I am, yours truly,
Abbey Lane, Stratford, E. THOMAS TYRER.

Profits in Dispensing.

SIR,—The writer signing himself "Profitable Dispensing," in your issue of August 15, overlooks the fact that it is not the privilege of the dispenser to decide what medicines he shall dispense, nor the form in which to present them. That is the prescriber's business.

And how many prescribers in ordering remedies for their patients concern themselves to know whether their prescriptions give little or much trouble to prepare, or stay to calculate the chemist's profit in the matter?

I regret I can see no force in the suggestion that, because a chemist does not make his own quinine, he should therefore shirk making pills and powders. The cases are not analogous.

It would suit me well at times to be able to fill prescriptions at the rate of one in five minutes, but I should be very loth to suggest to any doctor that he should modify his system of prescribing to enable me to do so. Trouble is the last thing the dispenser is interested to consider, and the tougher the task the better. Indeed, the fact that an hour scarcely passes in a busy dispensing house without bringing its difficulty gives a zest to an occupation which would otherwise be humdrum and *routinière*. In short, it keeps a man alive and alert.

British pharmacists have had a chequered time of it these last twenty years.; what is in store for them in time to come heaven only knows. It may be that dispensing will one day attain to the ease and simplicity of boxing or bottling and labelling other men's products, and the horny palm of the pill-maker become, as they say on the corn cures, "soft and supple as the surrounding parts." If the softening process halt there, well and good, but—enough; I will not attempt to pry into futurity. OLD'N. (103/21.)

Synonyms.

SIR,—In my opinion the Sale of Food and Drugs Act was passed to insure that the purchaser of any article should be supplied with the article which he asked for. It seems to me that Professor Attfield is desirous of subverting this purpose of the Act and compelling chemists to supply their customers when they ask for one thing (which they and their fathers have been in the habit of buying for years) with something altogether different, and also to make it penal to supply the article requested. When a customer asks for basilicon ointment, how can a chemist be justified in supplying him with ung. resinæ, B P., a preparation which he never saw, never heard of, and does not want? He wants the thing he has had before. Customers are very conservative, and do not like having improved (?) preparations thrust upon them. The old form has done them good before, and they want the same again, on the principle that "a devil you know is better than a devil you don't know."

An ignorant woman comes for 1*d.* worth of blue ointment. She wants it to apply to a child's head (but does not tell you this). The dil. preparation is bad enough in a case of this sort; what would be the result if the B.P. ointment were supplied? Again, grey powders are generally hyd. c. cretâ diluted with sacch. alb. If 1-grain powders were supplied instead of 4 or 5 grains, we should have a nice torrent of abuse from indignant mothers who thought we were cheating "poor fatherless bairns." Again, I consider that when opodeldoc is asked for I should not be justified in supplying lin. saponis, B.P., any more than I should be in substituting Towle's chlorodyne when Collis Brown's was demanded. But it's the old tale, "What in the captain's a choleric word is in the soldier downright blasphemy." Are the editors of the B.P. so utterly devoid of originality that they cannot invent new names for their improvements, or would it not be better to do away with improvements and give us something original. As Burroughs & Wellcome say to imitators—con sult a dictionary—there are upwards of 60,000 English words to choose from.

As regards the lac sulph. controversy, it seems that Professor Attfield has made up his mind that it shall be impossible to buy milk of sulphur, for the inclusion of the proposed synonym would banish the real article from England and leave nothing but a spurious substitute in the place of it, which the public and physicians would have to take *nolens volens*, and this in spite of magisterial decisions and the fact that prominent medical men have declared the old-fashioned article (which, by-the-by, made and established the reputation of the drug) superior to the improved (?) one.

To conclude, suppose the B.P. editors decide to add Beecham's pills as a synonym to one of their formulæ, how would T. B. and the retailers arrange the matter? It might lead to litigation.

Yours truly,
XYLENE. (103/40.)

Syr. Ferri Iodid.

SIR,—In your journal dated August 8, which has just reached me, I see in reply to "C. C." (92/56) you recommend a method for decolorising syr. ferri iodid. May I be allowed to suggest another method, namely, to add a crystal of citric acid and a coil of iron wire and expose to sunlight? I have found this method answer very well.

Yours respectfully,
FRANCIS ROSE.

24 Church Road, West Brighton, Aug. 13.

Impermeable Chip Boxes.

SIR,—I have just had to waterproof some wood, and have been using a mixture of kaolin and silicate of soda with excellent results. Would not this give you a note for waterproofing chip boxes for vaseline, penny ointments, &c.? Is the idea new as applied to this purpose?

Yours truly,
44 High Street. J. WALL.

[If anybody has patented this idea will he kindly advise us.—ED. *C. & D.*]

DISPENSING NOTES.

The opinions of practical readers are invited on subjects discussed under this heading.

279/17. *G. E. R.*—The German prescription you send is for ½ oz. elixir amarum compositum. The figures indicate the price charged (about 10½*d.*, including, apparently, a stoppered bottle).

103/51. *Puzzled* asks what is the third item on the following prescription:—

Resorcin	ʒij.
Acid. salicylic.	ʒiv.
Spt. sop. kal.	℥ij.
Alcohol ad	℥vj.

M. Ft. lotio.

Apply as directed.

"Spiritus saponis kalinus" is no doubt intended. It is often prescribed on the Continent. One form is made from equal parts of sap. vir., S.V.R., and sp. lavandulæ. Another, generally used in veterinary practice, is—

	Oz.
White soap	10
Carbonate of potash	1
Proof spirit	40
Turpentine	2

The former would be, we think, what is required for your prescription.

103/52. *Juvenis* wishes to know what to dispense as "vapour thymol conct., North Hants Co." The directions are: "To be *burnt* in a small room." There is a "vapor thymol, *Th. H.*," but it is for inhalation with warm water. Can a sample be obtained?

LEGAL QUERIES.

101/12. *E. S. V.*—The skin lotion prescribed in our Summer Issue, containing ʒj. of hyd. bichlor., should certainly be labelled "Poison," but it is not certain that the sale of the lotion needs to be treated as would the sale of hyd. bichlor. itself. You could scarcely sell it if you had to get every bottle signed, for such things are sold freely. You must judge for yourself whether you will follow the multitude or not.

91/16. *C. J.*—The title "Nurse James's Ointment" would render the preparation liable to stamp duty, although it is only sold in penny boxes.

102/64. *Jacob.*—It is claimed, and it may be correctly, that if you sell any liquid in a bottle branded with some one's name, you infringe the Merchandise Marks Acts. It is certainly not necessary that the person aggrieved should first have given notice of his intention to prosecute. We have some doubts about a conviction where fraud or misapprehension are not possible (as, for instance, selling hair-oil in a soda-water bottle); but traders who do not care to be the heroes of a test case had better avoid the risk.

95/27. *J. V. M.*—If you have not a petroleum licence, you may only keep rectified benzine in bottles not larger than 1 pint each, securely stopped, and not more than 3 gallons in all. Each bottle must be labelled, and the words "Highly inflammable" and the vendor's name and address must appear on each label.

102/60. *Styptic* asks if he can get at an officer who has left England for India owing him money? Indian tradesmen who give credit freely generally find it effective, in the last resort, to complain to the colonel of the regiment. You should first give the officer due notice, and then, failing a settlement, you might complain to the colonel or to the India Office.

103/42. *Methylated.*—You must not make any medicinal preparation with methylated spirits, except the four liniments, without the special consent of the Board of Inland Revenue. We are confident its use would not be sanctioned for the preparation of a toothache-tincture.

104/17. *Dilemma.*—As we understand, the Board of Inland Revenue regard any wine containing not less than 1 grain of quinine to the ounce as medicated, and capable, therefore, of being sold by chemists without a wine licence. They do not, however, invariably accept the mere statement on a label that the wine is of the required strength.

105/37. *J. Clark.*—The executors of a deceased chemist can carry on the business as "the executors of the late John Blank, chemist and druggist," if they think fit, and this is, perhaps, the strictly correct method. But we know of nothing to prevent them continuing the business simply in the name of John Blank as before. They are not required to use in any way the name of the qualified chemist whom they employ. There is no limit of time during which they may carry on the business. You will find a case bearing on this in THE CHEMIST AND DRUGGIST DIARY, 1891, page 324.

MISCELLANEOUS INQUIRIES.

102/91. *Manager.*—The preparations used for increasing the size of the bust contain a bitter and aromatics; but we do not suppose this part of the human anatomy will grow if a person is not predisposed to *embonpoint*. Various articles are advertised in ladies' journals.

91/36. *G. C. D.*—Indian Tincture, or Indian Brandy. See the *C. & D.*, June 21, 1890, p. 344.

96/1. *Photographic* has been using a ferrous-oxalate developer of the usual formula, namely :—

1.

Neutral oxalate of potash	1 lb. avoir.
Warm water	64 oz.
Ammonium bromide	20 grains

2.

Sulphate of iron	1 lb.
Warm water	48 oz.
Citric acid	½ ,,

For use, add 1 oz. of No. 1 to 5 oz. No. 2 ;

and he is astonished to find that, although he has used it times without number, a dose made up this week thickens and throws down a thick precipitate ; he has also tried both powder and crystal ferrous sulphate with like results, and fresh chemicals produced no improvement. The whole secret of failure lies in the fact that by some error the directions have been reversed—they should read, " For use, add 1 oz. of No. 2 to 5 oz. of No. 1." Reversing these quantities means merely forming a certain quantity of ferrous oxalate, which is only soluble in excess of an alkaline oxalate, so that there must be a precipitate, as all the oxalate combines with the iron. If the thick developer has been kept, it may be utilised by adding solid potash oxalate, heating and adding distilled water till a brilliant orange-red clear solution is formed, the oxalate and water being added simultaneously, but not the oxalate in solution. The solution thus obtained may be diluted and used for developing as usual.

92/15. *Young Chemist* has tried the formula for **Teething-powders** given November 1, 1890, and finds they are not strong enough at times. He wishes to know if the following formula is safe :—

Armenian bole	gr. x.
Muriate of morphia	gr. x.
Calomel	℥ij.
Sugar of milk	1 lb.
M.	

Put up in 5-grain powders, and labelled : " 3 or 4 months, half a powder 6 or 8 months, 1 powder."

It would be quite safe so far as the doses are concerned, but we have decided objections to the presence of any opiate for children's teething-powders, and think if you leave out the morphia, and make the powders so that each 5 grains will contain 1 grain of calomel, you will find them as effectual. Label them : " For 6 months, half a powder ; and 1 year, 1 powder." Children don't usually commence teething under 6 months. The same reasons apply to any **Soothing Syrup** containing morphia. Try :—

Sodæ bicarb.	gr. xij.
Syr. papaver	ʒij.
Syr. sennæ	ʒiv.
Ess. anisi	gtt. vj.
Syrup. simplicis ad	℥ij.

Dose.—6 months. half a teaspoonful ; 1 year, 1 teaspoonful ; 3 years, 2 teaspoonfuls ; three or four times daily.

101/3. *A Glasgow Chemist.*—We do not like to publish letters attacking some one unknown to us for conduct the particulars of which are not fully before us. In your case we should be certainly disposed to close our account with the firm you allude to if we could buy as well elsewhere ; but that is different to pillorying them in this journal.

101/14. *Viridis.*—**Hamburg Tea.**

	Parts
Fol. sennæ	100
Fructus coriandri	25
Mannæ calabrinæ	50
Acidi tartarici crystallisati minutim contusi	4

M. Fiant species minutim concisæ.

Rub the tartaric acid with three times its weight of the manna, and then combine the whole.—*Hager.*

94/67. *B. H. A.*—Perhaps the parchment is paraffined at one side. You might try this.

97/12. *Sac. Ust.*—Excess of camphor is ordered in the B.P for **Aq Camphoræ** to ensure a saturated solution. It does not say to dissolve, but to let it stand two days at least, and pour off as required. The solubility of camphor in water is about 1 in 1,000.

100/36. *Lac.*—Boric acid is the best milk-preservative. A teaspoonful for each gallon is enough.

104/64. *F. G.*—The above answers your query.

98/29. *J. S.*—**Caffeine and Cocaine Injection.**—You may use the following solution :—

Cocaine hydrochlorate	4 grammes
Caffeine	1 ,,
Salicylate of soda	2 ,,
Distilled water to	40 minims

Make a solution.

From 2 to 6 minims of this solution to be used four minutes before the tooth is extracted. One half of the quantity is to be injected at one side of the tooth, and the remainder at the other. Some dentists never exceed the half-grain.

91/19. *New Subscriber.*—**Liq. Santal Flav. Co.**—The following is a formula which we have already published :—

Ol. santal flav.	♏ 200
Ol. cubebæ	♏ 100
Ol. copaibæ	♏ 30
Ol pimentæ	♏ 5
Ol. cassiæ	♏ 5
Tinct. buchu	ʒ x.
Inf. buch. conc. (1 to 7)	ʒ x.
Aquæ	ʒ v.
Sp. vini rect.	ʒ xiij.
Liq. potassæ	ʒ x.
Pulv. lap. pumic.	ʒ iij.

Heat the liq. potass. to boiling-point, and pour into a bottle along the oils. Allow to stand for two days, then add the water ; stand for half an hour ; lastly add the other liquids. Shake well together, add the pumice-stone, allow to stand for three days, then filter.

94/60. *Studens.*—**Liquor Sennæ Dulcis.**—Exhaust 15 lbs. of senna leaves by percolation with 5 gallons of boiling water, or by double maceration with 8 gallons of boiling water. Strain, add 120 grains of nitrate of potash, and evaporate to 10 lbs., in which dissolve 4 lbs. of sugar. When cold add 25 oz. of rectified spirit containing 40 minims of oil of coriander, and sufficient water to make the whole measure 230 oz.

R. Fisher.—We are not a Court of Appeal, and the publication of your letter would be unjust and dangerous.

103/22. *J. A. R.*—You express yourself in language which is rather too warm for publication. " Utter contempt " is an almost parliamentary—we mean unparliamentary—phrase.

102/34. *J. Burt*—Have you tried Potter & Clarke for the root ? The value of the formula you quote can only be ascertained after trial.

102/49. *Tanner.*—To **Renew Tanned Leather** upon canvas shoes try formula given July 18, 1891.

Information Wanted.

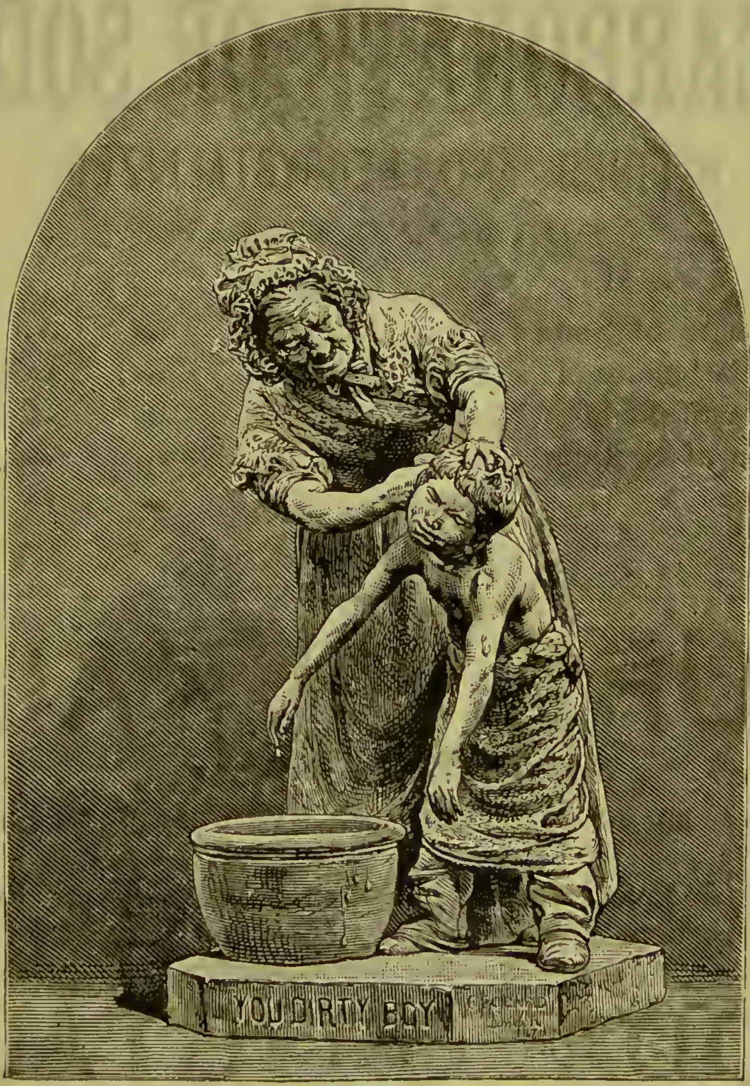
[*Replies to the following requests are solicited by correspondents of* The Chemist and Druggist.]

95/24. *F. E.*—Formula wanted for **Cooked and Pancreatised Milk Food.**

103/24. **Albuline**—maker of.

BURROUGHS, WELLCOME & Co
LIBRARY
No.

Pears' Soap



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Mono Carbonate of Soda	1·90
Sulphate of Soda	trace
Chloride of Sodium	·035
Moisture	·82
Insoluble	nil

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Caffeine Citrate, P.B.
Camphor Bells, Blocks, & Flowers.
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Cocaine and its Salts.
Corroſive Sublimate.
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Ext. Cocæ Liq. P.B.
Iodides of the Alkalies.
Iodoform.
Liq. Biſmuthi et Am. Citratis.
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Mercurials, Calomel, &c., &c.
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Ext. Conii Nov., P.B.
Ext. Hyoscyami Bien., P.B.
Fol. Hyoscyami Bien., P.B.
Succus Belladonnæ, P.B.
Succus Conii, P.B.
Succus Hyoscyami, P.B.
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The attention of Members of Conference is directed to the contents of the subjoined memo., which we are now sending out to Chemists all over the country; but, if this catches the eye of any member who has not received attention, we earnestly solicit applications for literature, specimens, &c., in accordance with the terms expressed.

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MEMO. TO PHARMACIST.

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LONDON, E.C.

Laboratories:
SMITHFIELD WORKS, E.C.

Dear Sir,

As we notified in "The Chemist and Druggist" of the 18th July and 1st August, in connection with the Medical Congress, we published a series of twelve-page pamphlets containing notes on foods and other matter useful to Medical men, Chemists, and Pharmacists. We now post you copies of a few of these books, and earnestly ask you to glance over them and make a selection of those, if any, you consider most suitable for your customers, at the same time giving us an idea as to the number you desire sent.

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They stand without a rival, and have by far the largest sale of any Patent Medicine in the World. This is a fact which every business man is bound to admit.

All Foreign Dealers will find BEECHAM'S PILLS the most Saleable Medicine in the Market.

The health-restoring and life-giving properties of these Pills are such as to increase their demand every yaer

The words "BEECHAM'S PILLS, SAINT HELENS," are on the Government Stamp affixed to each box.

Prepared only and sold by the Proprietor, **THOMAS BEECHAM ST. HELENS, LANCASHIRE, ENGLAND,** in boxes at 1s. 1½d. and 2s. 9d. each, with full instructions for use.
44

LLOYD'S A1 COMPRESSED TABLETS

OF PURE DRUGS.

COMPLETELY DISINTEGRATING.

THE rapid growth of our **Pearl-coated Pill** and **Compressed Tablet** Trade since the opening of our premises at the commencement of this year has compelled us not only to double our staff of men, but also to fix a powerful Engine for driving all our Machinery.

We are now, therefore, in a position to compete on equal terms with the oldest established houses, and, having the advantage of all the latest improvements in our Machinery, we can turn out both Pills and Tablets in the most perfect condition.

NET PRICES.

	1 lb.	7 lb.
Chlorate of Potash Tablets	1/3	1/0
Chlorate of Potash and Borax Tablets ...	1/3	1/0
Compound Sulphur Tablets	1/9	1/6
Soda Mints Tablets	1/3	1/0

IN TINS FREE.

Special Quotations for Tablets in 6d. and 1s. Boxes or Bottles,

WITH CHEMIST'S NAME ON LABELS IF DESIRED.

REGISTERED TRADE MARK.

SEMPER EADEM

T. HOWARD LLOYD & CO.

HIGH STREET and TOWNHALL LANE,
LEICESTER.

PRINCIPAL—Mr. T. HOWARD LLOYD, 18 years Partner in the Firm of JOHN RICHARDSON & CO.

BARRON, HARVEYS & CO.

GILTSPUR STREET, LONDON, E.C.

Beg to inform their friends and the Trade generally that, having purchased the Business of

BARRON, SQUIRE & CO., BUSH LANE,

and also the various Formulæ of the Special Preparations of

JAMES BASS & SONS, HATTON GARDEN,

they are prepared to execute orders for the same, and pledge themselves to supply them in all their integrity.

Specimens of these Preparations have remained in the Museum of Kew Gardens during 23 years without deterioration.

FREDK. BOEHM,

Billiter Square Buildings,

LONDON,

KEEPS STOCK OF

BEST OTTO OF ROSE.

ESSENTIAL OILS:—

ALMOND BITTER.
ANISEED.
BAY.
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CARDAMOMS.
CEDARWOOD.
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CLOVES.
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HOPS.
JUNIPER.
PIMENTO.
SAFFROL.
SANDALWOOD.
THYMEN.
WINTERGREEN.

THYMOL, CRYST.

[A]

DRIED MOSS Compressed into Sheets

Syn.—Sphagnum or Turf Moss (Beckstroem's).

On account of its great capability of sucking up or imbibing liquids, this forms a useful dressing for absorbing the Discharge from open Wounds, and especially Urinary Discharge in Bladder, Kidney and Dropsical Affections. It is Antiputrescent, and may be made thoroughly Antiseptic by being sprayed with Sublimate Solution before use. The pressed sheets will absorb eight times their weight of water, and when disintegrated may be formed into Elastic Pillow or Pads by enclosure in Muslin Bags.

London Agent—**WILLIAM MARTINDALE,**
PHARMACEUTICAL CHEMIST,
10 NEW CAVENDISH STREET, LONDON, W.

W. EDWARDS & SON,

157 QUEEN VICTORIA STREET, LONDON,

WHOLESALE AND EXPORT DEALERS IN

Patent Medicines and Proprietary Articles,

ENGLISH, AMERICAN, FRENCH, &c.

SOLE AGENTS for ROCHE'S HERBAL EMBROCATION,

Burchell's Anodyne Necklaces, Ford's Balsam of Horehound, Widow Welch's Pills, by Mrs. Smithers Oxley's Essence Ginger, and the preparations of Messrs. Hudson & Son, late of the Haymarket, London.

PRICE LISTS SENT ON APPLICATION. ORDERS CAREFULLY AND PROMPTLY EXECUTED

DAKIN BROTHERS

(ESTABLISHED 1820).

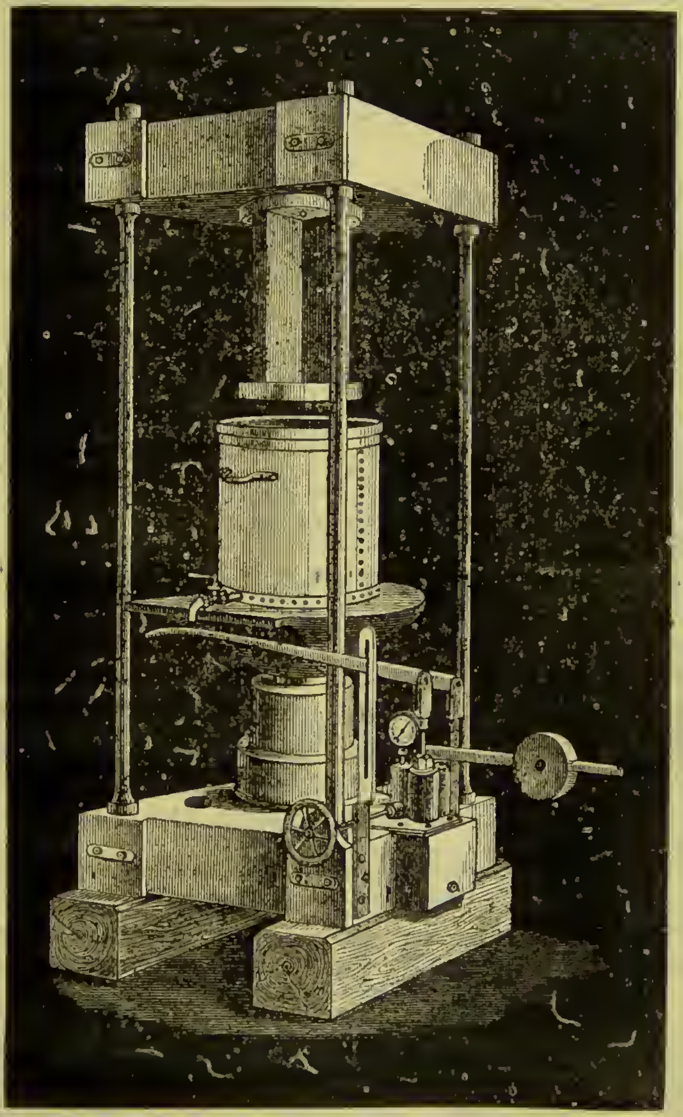
MANUFACTURING CHEMISTS
AND
WHOLESALE AND EXPORT DRUGGISTS.

LINIMENTS,
TINCTURES,
SPIRITS, and
FLUID EXTRACTS
OF
OUR OWN
MANUFACTURE.

IN BOND.

DUTY FREE.

The Excise Regulations allow the Bottles to be as small as 5 ozs., and the total quantity as little as 2 gallons.



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QUOTATIONS
UPON
APPLICATION.

We court a comparison of our Prices and Preparations with those of German makers.

ALL CASES
WIRED & SEALED
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WAREHOUSE.

PROMPT SHIPMENT.

Owing to the increase in our Business we have been compelled to extend our Premises, our address being now as follows :—

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SUNDRIES & INSTRUMENT DEPARTMENT—29A Bury Street.
OFFICES—87A Leadenhall Street.

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PAPAÏN (Dr. FINKLER & CO.)

THE VEGETABLE PEPSINE.

Digests in ACID, ALKALINE, and NEUTRAL SOLUTION. Invaluable for the immediate relief and final cure of all kinds of DYSPEPSIA, and as a SOLVENT of the False Membrane in DIPHTHERIA: successful in the treatment of Cancer, Eczema, Psoriasis, Ear Diseases, Fissure of the Tongue. (*See Pamphlet.*)

PURITY AND UNIFORMITY

are *absolutely guaranteed*: every parcel is carefully tested, and none which is not up to our standard quality leaves the works; a second test is made by an independent London analyst.

The "LANCET" says (April 25, 1891):—"It is evidently a trustworthy product, and one which may be relied upon for uniformity of digestive power."

The "MEDICAL ANNUAL," 1891, page 546, says:—"The name of Dr. Finkler & Co. is inseparably connected with this drug, and the samples sent us by B. Kühn, 36 St. Mary-at-Hill, London, are undoubtedly pure preparations of this interesting substance."

PAPAÏN (Dr. Finkler & Co.) is sold in

POWDER, in bottles containing ½, 1, 4 oz., and in bulk.
PILLS, " " 25, 50, & 100 Pills of 1 or 2 gr.
TABLOIDS, " " 25 and 100 of 2 gr.
LOZENGES, in metal boxes, convenient for pocket.
LIQUOR PAPAÏN et Acid Glycerine; et Iridin; et Bismuth; et Cascara Sagrada, in bottles containing 4, 8, and 16 oz.

PAPOID-PEPTON.

By treating finely minced fresh lean Beef with Papain a HIGHLY CONCENTRATED PEPTON is obtained.

The following may be considered its principal advantages over other Peptons:—

(1) Great concentration of Pepton and soluble albumen.
(2) Great solubility; it dissolves in every known beverage, and is, therefore, easily administered.
(3) Great stability; being in a dry form, it will keep in any climate, and for any length of time.

PAPOID-PEPTON is of the greatest value in the sick-room and amongst Convalescents recovering from Typhoid, Diphtheria, Scarlet, and other Fevers, where the digestive power has been greatly impaired. By its ready assimilation it does not cause any irritation to the stomach or digestive tract, therefore no flatulence, vomiting, or gastric pain of any kind is observed. To the healthy it is of importance as an addition to broth, milk, cocoa, chocolate, wine, or any other beverage, thus giving an additional nutritious value to these. (*See Pamphlet.*)

The "LANCET" (on April 4, 1891, page 781) says:—"PAPOID-PEPTON seems likely to prove a valuable adjuvant to food for the debilitated; and it may obviously be employed to increase the nourishing value of many kinds of ordinary food."

PAPOID-PEPTON is sold in patent stoppered bottles of 10 and 20 doses, and in tins of 5 and 10 lbs.; also as
PAPOID-PEPTON COCOA, in tins of 4, 8, and 16 oz.
PAPOID-PEPTON CHOCOLATE, in boxes and bulk.

OBTAINABLE THROUGH THE WHOLESALE DRUG HOUSES, AND

B. KÜHN, 36 ST. MARY-AT-HILL, EASTCHEAP, LONDON.

PAMPHLETS AND SAMPLES ON APPLICATION.

DUNCAN, FLOCKHART & CO.,

WHOLESALE AND EXPORT DRUGGISTS, EDINBURGH.

CHLOROFORM

(DUNCAN'S),

Prepared from Pure and Methylated Spirit, also Chloroform (blue label).

Put up in all sizes of bottles. A strap with Name and Trade Mark of the Firm is placed over the stopper of each bottle. For Export, in bottles corked and luted (stoppers attached), and in hermetically sealed flasks when required.

N.B.—We guarantee all our Chloroforms to be PURE CHLOROFORM, *answering all the tests of the British Pharmacopœia.*

CHLORIC ETHER

(DUNCAN'S).

This is a special preparation, quite different from Spir. Chloroformi P.B., perfectly miscible with water, and always of the same strength.

SPECIALITIES.

Castor Oil.
Almond Oil.
Olive Oil.
Cod-liver Oil.
Acetic Acid.
Tartaric Acid.
Phosphoric Acid.
Salicylic Acid.

Camphor.
Glycerine.
Lithia Salts.
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Castile Soap.
Pepsin, P.B.

Albumen.
Herbs & Extracts.
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Mercurials.
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Ess. of Lemon.
Gums. Perfumes.
American Cotton Oil, etc.

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FUERST BROS.

LONDON, E.C., 17 Philpot Lane; and NEW YORK, 2 & 4 Stone Street.

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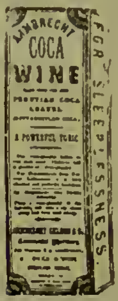
We only supply goods direct from Manufacturers personally known to ourselves. We can consequently vouch for the purity of the articles we sell.

CORRESPONDENCE SOLICITED.

To the Trade only.

Strictly Private.

ORDER SHEET.



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Gentlemen,

Please to send immediately

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COCA PREPARATIONS
(ARMBRECHT).

		Wholesale	Retail price per doz.	£	s.	d.
Doz. Coca Medium	Imperial Pints	36/-	48/-			
,, Coca Burgundy		36/-	48/-			
,, Coca Malaga		36/-	48/-			
,, Coca Port		36/-	48/-			
,, Coca Sherry		36/-	48/-			
,, Coca and Meat Wine		36/-	48/-			
,, Coca Champagne		46/6	56/-			
,, ,, ,,		26/6	33/-			
,, Coca Wine Extract		31/6	42/-			
,, ,, ,,		49/6	66/-			
,, Coca Lozenges ...		13/6	18/-			
,, ,, ,, ...		22/6	30/-			
,, ,, ,, ...		45/-	60/-			
			£			

KOLA PREPARATIONS
(ARMBRECHT).

	Wholesale	Retail price per doz.	£	s.	d.
Doz. Kola Wine (Imp. Pint.)	36/-	48/-			
,, ,, ,, (½ Imp. Pint).	22/6	30/-			
,, Kola and Coca Wine	36/-	48/-			
,, ,, ,,	22/6	30/-			
,, Kola Wine Extract	31/6	42/-			
,, ,, ,,	49/6	66/-			
,, Kola and Coca Wine Extract	31/6	42/-			
,, ,, ,,	49/6	66/-			
,, Kola Lozenges ...	13/6	18/-			
,, ,, ,, ...	22/6	30/-			
,, ,, ,, ...	45/-	60/-			
,, Kola and Coca Lozenges	13/6	18/-			
,, ,, ,,	22/6	30/-			
,, ,, ,,	45/-	60/-			
,, Kola, Coca, and Extract of Meat Lozenges ...	13/6	18/-			
,, ,, ,, ...	22/6	30/-			
,, ,, ,, ...	45/-	60/-			
		£			

........................Pamphlets for Distribution—No Charge.

To

Address

Messrs. *ARMBRECHT, NELSON & CO.,*
2, 3, & 4 *Duke Street* (5 & 6 *in Progress of Building*), *Grosvenor Square, W.*

SPECIAL SUMMER CONCESSION.—If Cheque be enclosed with each Order, we offer a discount of 5 PER CENT. on not less than one dozen, Carriage Paid, England and Wales, and half to SCOTLAND and IRELAND.

A Steady Increase of Business.

The following unsolicited reports are taken from letters which have quite recently come to hand:—

The Scott's Drug Company, 68 Queen Street, Morley, write on August 11, 1891:—"We find Guy's Tonic is making its way here."

Mr. J. Richards, Chemist, 13 Cardiff Street, Aberdare, writes:—"Since the distribution of the last parcel of printed matter, Guy's Tonic has become quite popular here, and the sale is steadily increasing."

Messrs. J. Peat & Co., 31 Blackburn Road, Church, near Accrington, August 8, 1891:—"We find that Guy's Tonic, being pleasant to take, is a great favourite here."

Mr. R. K. Kermode, Chemist, Castletown:—"Thanks for the very pretty cards which I have received; all your advertisements are, I consider, unique of their kind."

Mr. W. B. Dougall, Chemist, of Auchterarder:—"I have had a good many inquiries for Guy's Tonic, and also repeat orders, which shows that benefit had resulted from its use."

Mr. J. Skinner, Chemist, 558 Govan Road, Govan:—"The sale of Guy's Tonic is still increasing here."

Mr. T. Usher, High Street, Sittingbourne:—"I have stocked Guy's Tonic for a considerable time, and find the sales increase."

Mr. J. W. Scholfield, Chemist, Rothbury, Northumberland:—"I have already intimated to you that I stock Guy's Tonic. The sale is now decidedly on the increase."

Mr. W. H. Brooks, Broadway, Deptford:—"We have a good sale for Guy's Tonic, both here and at my branch houses."

Letters of this character are continually being received from all parts of the United Kingdom, testifying to the satisfactory nature of our business relations with the Trade. An Agency for Guy's Tonic always proves profitable to Chemists; write us for full particulars. Pamphlets, Counter Bills, Show-cards, &c., in any quantities free.

Address—Guy's Tonic Company, 4 Ludgate Circus, London.

LOFTHOUSE & SALTMER,

MANUFACTURING CHEMISTS. WHOLESALE AND EXPORT **DRUG MERCHANTS**

HULL,

Manufacturers of all Pharmaceutical Preparations on the best and most improved principles. Quotations on Application

DEALERS IN PURE CHEMICALS

For Medicinal, Photographic, and Commercial purposes.

Importers of Cod Liver, Castor, and Olive Oils; Extra Super Essence of Lemon and Bergamot, Otto de Rose, and all Essential Oils; Valentia Saffron; Vanillas; Fruit Essence; Carmine; Aniline Dyes; Bees' Wax, &c., &c.

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Special Agents for Sicilian Sublimed Sulphur in 2-cwt. bags, and Rolled Sulphur in 3-cwt. casks. Most Favourable Quotations can be given to large Wholesale Dealers on application.

J. F. MACFARLAN & CO.,

MANUFACTURERS OF

MORPHIA and its SALTS, CODEIA and its SALTS,

AND ALL PRODUCTS FROM OPIUM.

PURE CHLOROFORM

ANSWERING ALL THE TESTS OF THE BRITISH PHARMACOPŒIA.

Antiseptic Dressings and Appliances used in the Listerian System of Surgery

MAY BE HAD FROM ALL THE WHOLESALE HOUSES, AND AT

17 NORTH BRIDGE, EDINBURGH, AND 71 COLEMAN STREET, LONDON.

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HUNYADI JÁNOS.

This Water, when sent out from the springs, does not bear, and never has borne, a "Diamond" Mark. The **ONLY** guarantee of genuineness of **EVERY** bottle is the Signature upon label of the Proprietor, "ANDREAS SAXLEHNER."

PRICE: PER CASE OF 25 LARGE BOTTLES, 22/-. PER CASE 50 SMALL BOTTLES, 37/6. NET FOR CASH.

VIN MARIANI

CARBOLIC SMOKE BALL.

CIGARES DE JOY

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QUINA LAROCHE

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DESICCATED MALT

DUSARTS WINES & SYRUPS

SANTAL MIDY

Hamilton's Linseed Leaves

CHEMISTS CAN OBTAIN FROM ALL THE PATENT MEDICINE WAREHOUSEMEN.

THE WHOLESALE AND SHIPPERS SHOULD APPLY TO THE IMPORTERS,

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P.S.—Write for Gabriel Jozeau's Catalogue, which is the only complete list of French Medicines in the United Kingdom.

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MANUFACTURERS OF

MORPHINE HYDROCHLORATE, in powder and crystals
MORPHINE ACETATE
MORPHINE SULPHATE, in powder and crystals
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Introduced by us and specially prepared for hypodermic treatment.

JALAPINE SCAMMONINE SALICINE
CHLOROFORM PURE
CHLOROFORM METH.
Our brand has been for many years known to the Wholesale Trade as absolutely pure.

CODEINE APOMORPHINE MURIATE GINGERINE CAPSICINE
ALOIN SCAMMONY RESIN JALAP RESIN ERGOTINE CANTHARIDINE

EDINBURGH Address—21 Duke Street. **LONDON Address—12 Worship Street, E.C.**
NEW YORK Office—20 Cedar Street. DILLON & CO., Agents. [1]

"SPECIALITIES" OF WIDE REPUTATION

Suitably Packed for Home and Export, in various Languages, for all Markets.

'COAGULINE' The Cement for all Broken Articles.
LINSEED, Chloro.-Linseed and Throat Lozenges, Jujubes, &c.
CUE CEMENT, Cue Tips, Wafers, FIXERS, CHALKS, &c.
'LAVA,' A fusible imperishable CEMENT.
Patent Glass Valve Tubes, For Feeding Bottles.
ABSORBENT COTTON WOOL.
COMPOUND ESSENCE OF LINSEED, FOR COUGHS AND COLDS.
OXYMEL SCILLÆ (exceptionally brilliant) Dec. Senegæ Conct.
PHOSPHOSACCHARITE.
GLYCERLINE.
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TIC PILLS, LINUM CATHARTICUM PILLS, Aspinall's PILLS, &c.

Prices, Circulars with Name and Address, Specimens, Show Cards, Glass Tablets, &c., &c., on application.

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PURE REFINED BEESWAX.

"W. H. B."

Free on Rail in Liverpool. Ex Quay London, Glasgow, Bristol, and Hull.

In 2 lb. cakes in cases of about 130 lbs.	£7	0	0	net per cwt.
" 1 " " " 130 "	7	0	0	"
" ½ " " " 130 "	7	5	0	"
" ¼ " " " 130 "	7	5	0	"
" 1 oz. cakes in 2 lb. parcels in cases of 54 lbs. ..	7	10	0	"
French Refined, in 1 lb. cakes in cases of 130 lbs.	6	10	0	"

PURE WHITE BEESWAX.

"W. H. B."

IN CASES OF 54 LBS.

Free on Rail in Liverpool. Ex Quay London, Glasgow, Hull, and Bristol.

In round cakes in 2 lb. parcels, or in oblong cakes loose	£8	0	0	net per cwt.
In 1-oz. cakes in 2 lb. parcels	8	0	0	"
Plain blocks of 7½ lbs. in cases of 250 lbs. ..	7	15	0	"
White Wax.—Plain round cakes in 2 lb. parcels in cases of 72 lbs.	7	0	0	"

These prices are only for 5 cases or 5 cwts. Our customers only are our agents. Weights and quality guaranteed.

PAYMENTS.—After the goods have sailed from here we make a (30 days after sight) draft on the buyer, payable in London for amount of the invoice.

W. H. BOWDLEAR & CO.

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"BOWDLEAR BOSTON."
36 CENTRAL WHARF, BOSTON, MASS., U.S.A.

EADE'S

CELEBRATED

GOUT

AND RHEUMATIC

PILLS.

52

THE SAFEST and MOST EFFECTUAL CURE for

Gout,
Rheumatism,
Rheumatic Gout,
Lumbago,
Pains in the Head
Face, and Limbs, &c.

They require neither confinement nor alteration of diet, and in no case can their effect be injurious.

Prepared only by GEORGE EADE, 72 Goswell Road, London, and sold by all Chemists, in bottles, 1*s.* 1½*d.*; three in one, 2*s.* 9*d.*

UNG. EMOLLIENS (ELTON & CO.)

AN IDEAL OINTMENT BASIS.

Ung. Emolliens is prepared expressly for the *Medical Profession*, and will be found to far surpass in therapeutic value any previous preparation of the kind brought to their notice.

UNG. EMOLLIENS ANTISEPTICUM (Elton & Co.)

Prepared by the same special process of manipulation as the Ung. Emolliens, but medicated by combination with a new and specially prepared basic and antiseptic Salt of Zinc and other approved remedies.

The following skin diseases may be mentioned, in which it has proved a most valuable and certain remedy:—Pruritus Ani, Eczema, Acne Rosacea, Erythema, Herpes, Impetigo, Psoriasis, Scurvy, Erysipelas, Urticaria, Prurigo, Tinea-Versicolor, or any other irritation of the epidermal surface.

It is perfectly miscible with all fats, oils, and waters, and may be dispensed with any other medicament the physician desires to use in addition to its present constituents.

Prepared only by the Proprietors, Messrs. Elton & Co., 28 Endsleigh Gardens, N.W.

Sole Wholesale Agents:—

H. GILBERTSON & SONS, 11 St. Andrew's St., London, E.C.

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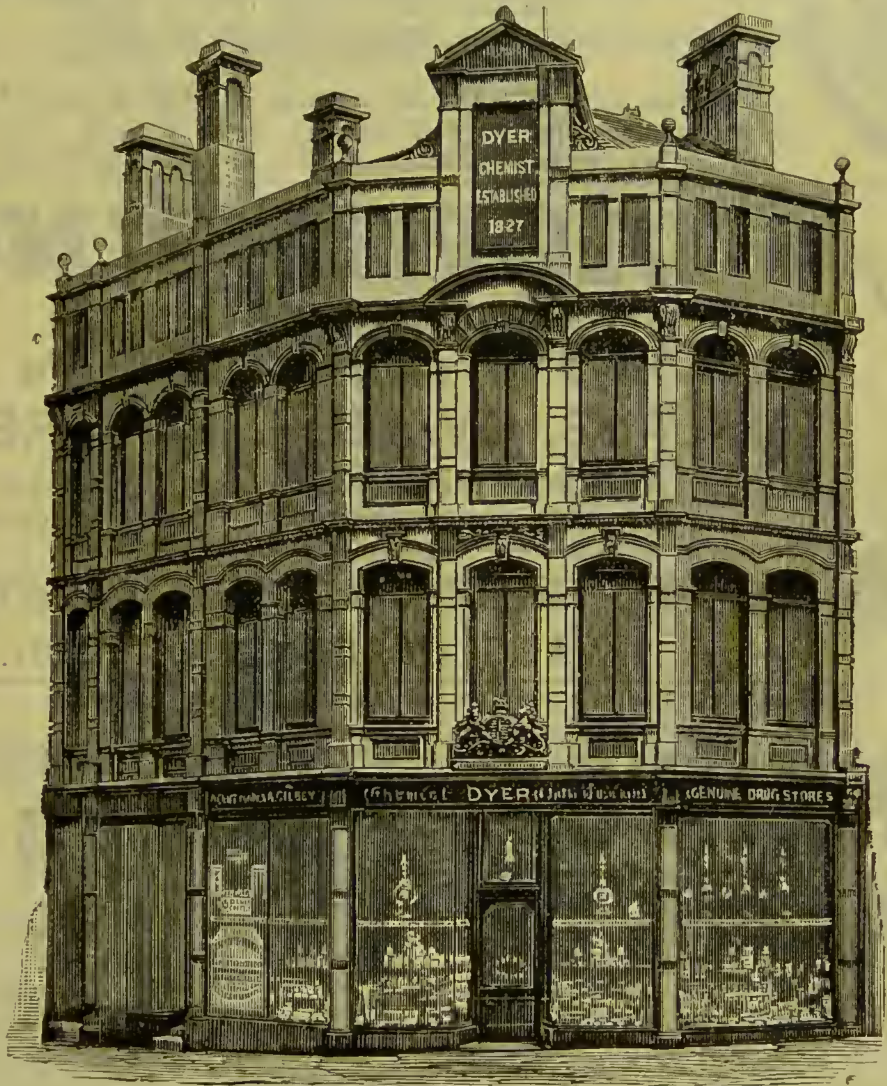

NEW SHOP ERECTED FOR Mr. W. DYER, CHEMIST, HALIFAX.

The above represents a handsome shop, &c., erected for Mr. Dyer, Halifax, the entire fittings for which were supplied by Evans, Sons & Co., and they have his permission to refer anyone (contemplating refitting or opening new premises) to him as to the manner in which they executed the work.

ESTIMATES, PLANS, &c., PROVIDED. SEE PRICE LISTS OF UNDERSIGNED.

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CANADA:
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Flint Glass Bottle Works,

THE OVAL, CAMBRIDGE HEATH, LONDON, E.

For Beauty, Cheapness, and Efficiency R. H. BARRETT'S

WATCH SMELLING-SALT BOTTLES

EXCEL ALL OTHERS IN THE MARKET.

The Caps are all fitted with INDESTRUCTIBLE WASHERS, to resist the action of Ammonia and retain the strength of the Salts.

Price, assorted white and coloured, 10/6 per gross (in 5-gross lots).

Chemists' and Perfumers' Bottles in great variety, Plain or Stoppered

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OUR SPECIALITY.

FLATS, OVALS, & SQUARES.

Without exception the prettiest Tinted Bottles in the Market
Equal to the best make. Prices moderate.

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GOLD MEDAL AWARDED, EDINBURGH INTERNATIONAL EXHIBITION, 1890.

No BATH ROOM or CARRIAGE is fully Equipped without

Recommended by Medical Men.

RANKIN'S CORK MATS

A REAL COMFORT

Warm, Soft, and Dry, Easily Washed, Clean, and Durable.

They Prevent Chills in Bathing, and keep the feet warm and comfortable.

Mr. GLADSTONE pronounces them to be *very useful*, and **Lord SALISBURY** and many of the Nobility and Gentry now use and appreciate them. They prevent cold feet in Driving, in Church, in the Counting-house, in Stone-floored Apartments. *Numerous testimonials to their usefulness in a great variety of ways.* Sizes: 1 ft. square to 20×45 in. Prices: 3/, 5/, 7/6, and 10/6 each. Special Mats up to 21/ each. Of all leading Chemists and Furnishing Houses.

CAUTION.—Each Genuine Mat branded "Rankin's Cork Mat."

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Wholesale Chemists' Agents: S. MAW, SON & THOMPSON

Trade Mark.

Registered.

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ASSOCIATION for the SUPPLY of PURE VACCINE LYMPH,

12 PALL MALL EAST, LONDON, S.W.

SOLE AGENTS FOR DR. WARLOMONT'S CALF VACCINE.

Tubes, 2s. each; Half Tubes, 1s. each. Pomade in vials, 5s.

HUMAN VACCINE, from healthy children only, microscopically examined and source quoted. Tubes, two-thirds full, 1s. 8*d.* each; Tubes one-third full and Lancet-charged points, 1*s.* each; Pin-points, 1*s.* 1*d.* each. Eighteen charged Small Points, 5*s.* Tubes, two-thirds full (same as those mentioned above, but without source), in quantities for export, £5 per 100 Tubes. Pin-points uncharged, 1*s.* per dozen. Vaccine Ejectors, 1*s.* 8*d.* each, including postage. Vaccinations by appointment. P.O.O.'s (including postage, and crossed London and Westminster Bank) with orders, payable to EDWARD DARKE *Secretary.*

Office hours, 10 to 4, Saturdays 10 to 2.

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POSITIVELY CURED BY WILLIAM RADAM'S

MICROBE KILLER.

This Medicine Cures Disease by Removing the Cause,

MICROBES,

AND IS NOT INJURIOUS TO THE SYSTEM.

Pamphlets and Testimonials gratis to any address.

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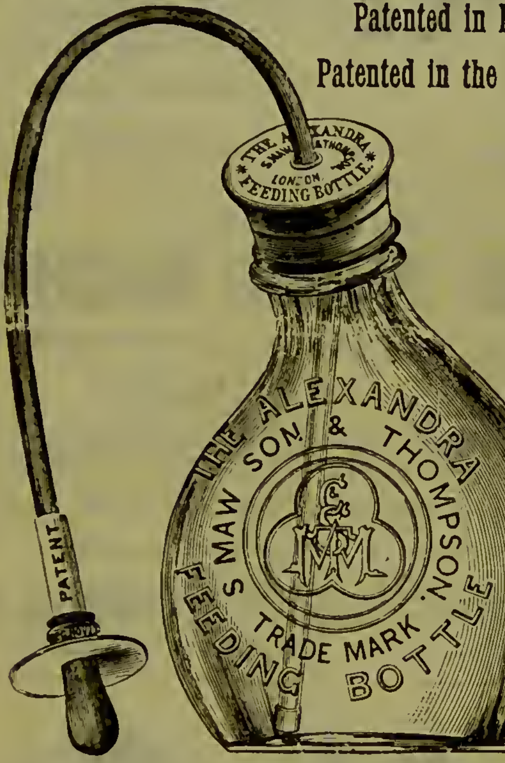
Branch—58 QUEEN VICTORIA STREET, E.C.

S. MAW, SON & THOMPSON'S

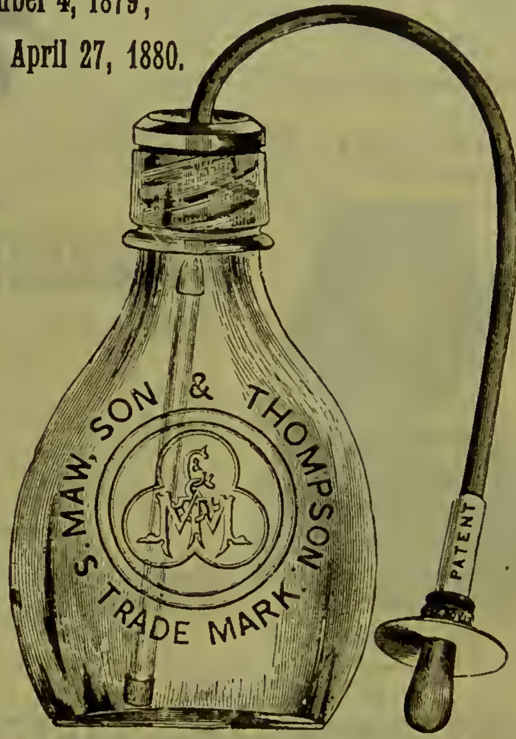
FEEDING BOTTLES.

Patented in England, December 4, 1879;

Patented in the United States, April 27, 1880.



THE ALEXANDRA. (Earthenware Cap.)



THE EXPORT. (Glass Screw Stopper.)

		White Fittings			Black Fittings		
Alexandra, Wood Top Corks	per doz.	3/-	4/-	—	3/3	4/3	—
Alexandra, Glass Screw Stoppers	,,	—	4/3	—	3/9	4/6	—
Export, Wood Top Corks	,,	2/9	3/9	—	3/-	4/-	—
Export, Glass Screw Stoppers	,,	—	4/3	—	3/9	4/6	—

The following are sent out with Black Fittings unless ordered to the contrary.

		With Ordinary Fittings			With Valve and Patent Fittings		
Alexandra, Earthenware Caps	per doz.	—	7/6	11/-	—	8/6	12/-
Alexandra, Glass Screw Stoppers	,,	—	7/6	11/-	—	8/6	12/-
Export, Earthenware Caps	,,	—	7/-	—	—	8/-	—
Export, Glass Screw Stoppers	,,	—	7/-	—	—	8/-	—

SPECIAL DISCOUNT FOR QUANTITIES.

Not less than £5 worth each or assorted...	10 per cent. off Invoice and 5 per cent. Cash.
Not less than £10 worth each or assorted...	15 per cent. off Invoice and 5 per cent. Cash.

Carriage paid to any part of the United Kingdom, Isle of Man, and Channel Islands, at the following discounts:—

Not less than £5 worth each or assorted...	5 per cent. off Invoice and 5 per cent. Cash.
Not less than £10 worth each or assorted...	10 per cent. off Invoice and 5 per cent. Cash.

S. MAW, SON & THOMPSON, 7 to 12 ALDERSGATE STREET, LONDON, E.C.

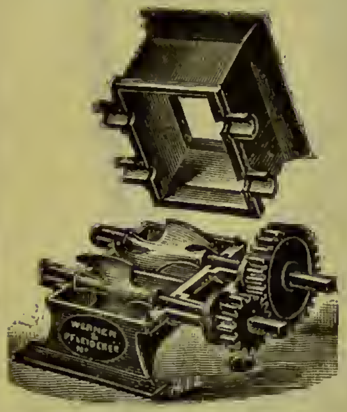
NEW CAPSULING MACHINE

The only Machine which leaves no crease or pleat on the Capsule.

Can be fixed to any Counter.
A single pull of the lever is sufficient to fix the Capsule.

[1]

Patentee—C. MELIN, 37 Crutched Friars, LONDON, E. C



Size 3, Type I, for 1-lb. Mass.

THE "UNIVERSAL"
KNEADING AND MIXING MACHINE

Pill Cutting, Pill Rounding, Pipers, and all other Machines for

PILL MASS MAKING,

Also for Horse Balls, Tooth Pastes, Ointments, Soaps, Powders, and for general Mixing, Incorporating, Sifting, and Straining.

REPLACES WITH ADVANTAGE ALL OTHER APPLIANCES FOR THESE PURPOSES.

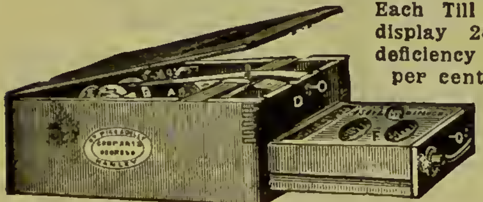
Made in various sizes, to do from ½ lb. up to 1 ton at a time.

WERNER & PFLEIDERER, 86 Upper Ground St., Blackfriars Bridge, **LONDON, S.E.**

Contractors to the War Offices of all the Great Powers and other Governments.

STOKES'
PATENT CHECK TILL SYSTEM.

A SOUND INVESTMENT.


G. R. STOKES & CO. HANLEY

Each Till has only to display 2*d.* per week deficiency to return 15 per cent. on outlay.

30,000
Sales Checked for
3 SHILLINGS.

Terms and full particulars on application.

G. R. STOKES & CO., Limited, Hanley, STAFF.

DISPENSING BOTTLES & PHIALS.
REDUCED PRICES.

3 and 4	6 and 8	12	16 ounce.
7/6	8/6	12/-	16/- per gross.

CRYSTAL (BLUE TINTED).

3 and 4	6 and 8	12	16 ounce.
9	10/-	14/-	18/- per gross.

WHITE PHIALS.

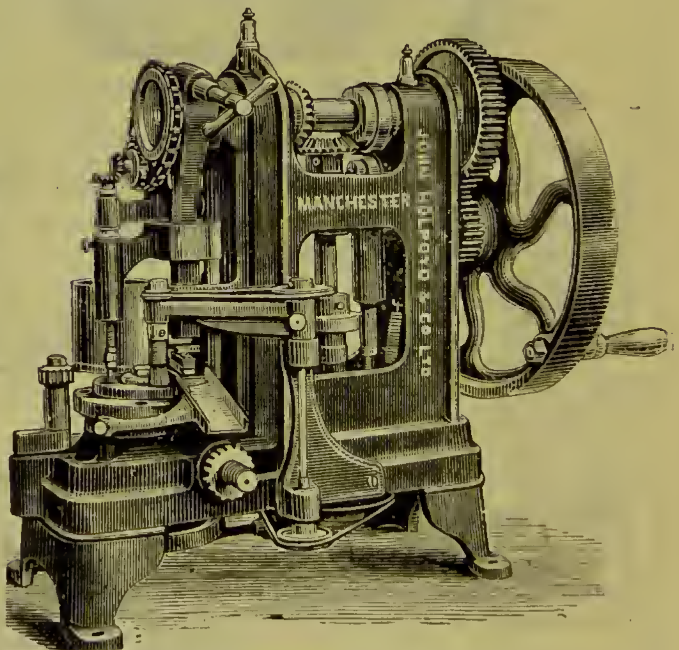
½	1	1½	2 ounce.
3/8	4/-	4/9	5/6 per gross.

WHITE PHIALS (SUPERIOR QUALITY).

½	1	1½	2 ounce.
4/3	5/3	5/9	6/3 per gross.

I. ISAACS & CO.

GLASS BOTTLE MANUFACTURERS
25 FRANCIS STREET, Tottenham Court Road, LONDON.
BANKERS: LONDON AND WESTMINSTER BANK.
ESTABLISHED UPWARDS OF 50 YEARS.



Sole Licensees for Manufacture and Sale of McFerran's Improved Automatic Machinery for Making

COMPRESSED TABLETS

Of various shapes and sizes, from ¼ gr. upwards. Nos. 4 and 5 Machines have been specially designed for

RETAIL DRUGGISTS.

Write for particulars and prices. [2]

Special Machines Manufactured to Contract for Inventors and Merchants.

JOHN HOLROYD & CO., Lim., *Tomlinson St. Works,* **Hulme, MANCHESTER**

S. MAW, SON & THOMPSON'S
GREEN FLINT
DISPENSING BOTTLES, &c.

For Prices in Crates, see Quarterly Price-Current, page 44.

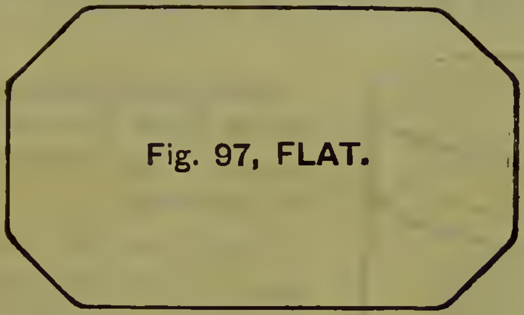


Fig. 97, FLAT.

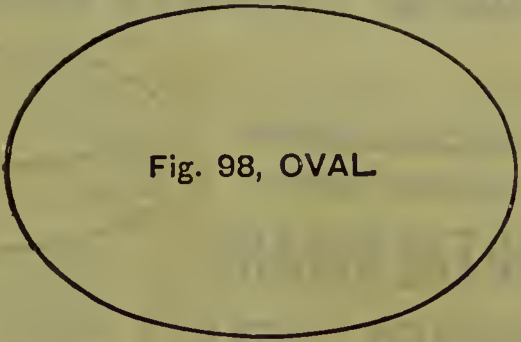


Fig. 98, OVAL.

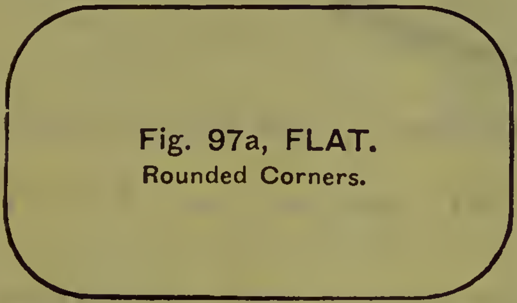


Fig. 97a, FLAT.
Rounded Corners.

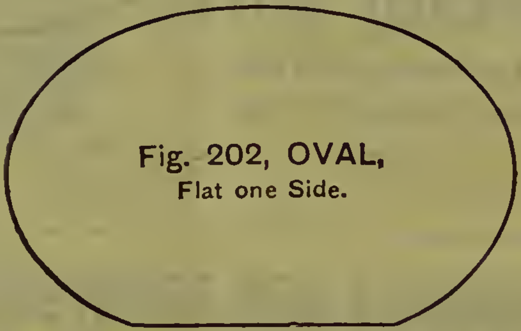


Fig. 202, OVAL,
Flat one Side.

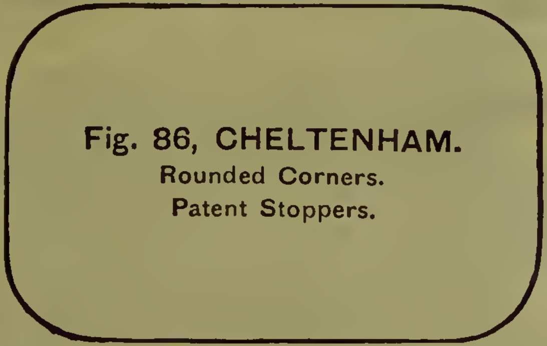


Fig. 86, CHELTENHAM.
Rounded Corners.
Patent Stoppers.

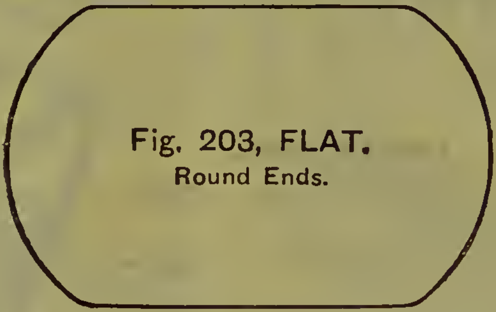


Fig. 203, FLAT.
Round Ends.

For White Flint and all other Bottles, see Quarterly Price-Current, pages 44 to 48.

	2	3	4	6	8	10	12	16	20	Ounce.
Fig. 97	10/-	11/6	11/6	12/9	12/9	20/6	20/6	23/6	30/-	Best, per gross
"	7/9	8/6	8/6	10/-	10/-	13/3	14/9	20/-	25/6	2nd, "
Fig. 97a	10/-	11/6	11/6	12/9	12/9	...	...	...	...	Best, "
"	8/-	9/-	9/-	10/6	10/6	...	..	...	...	2nd, "
Fig. 98	10/-	11/6	11/6	12/9	12/9	20/6	20/6	23/6	30/-	Best, "
"	7/9	8/6	8/6	10/-	10/-	13/3	14/9	20/-	25/6	2nd, "
Fig. 202	...	...	11/6	12/9	12/9	...	...	...	...	Best, "
Fig. 203	...	11/6	11/6	12/9	12/9	20/6	20/6	23/6	...	Best, "
Fig. 86	...	...	...	20/-	20/-	...	...	...	...	Best, "

USUAL DISCOUNT.

S. MAW, SON & THOMPSON, LONDON.

WILLIAM TOOGOOD'S

WAREHOUSE AND SHOW ROOM,

BURLINGTON BUILDINGS,

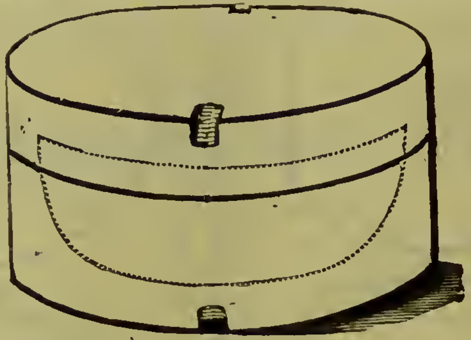
HEDDON STREET, REGENT STREET, LONDON, W.

TOOGOOD'S

IMPROVED PATENT

EARTHENWARE COVERED POTS

Are claimed to be the most perfect and convenient yet offered to the Trade.



Owing to the increasing demand for our Patent Pots, we have introduced a Special THIN Series for Dispensing.

These Pots are beautifully glazed and finished, and, being very light, are specially adapted for sending by post.

ORDINARY THICKNESS—

1 dr.	2 dr.	½	¾	1	1½	2	3	4	6	8 ounces.
1/6	1/6	1/6	1/8	1/10	2/	2/3	2/10	3/6	4/6	5/6 per doz.

THIN FOR DISPENSING—

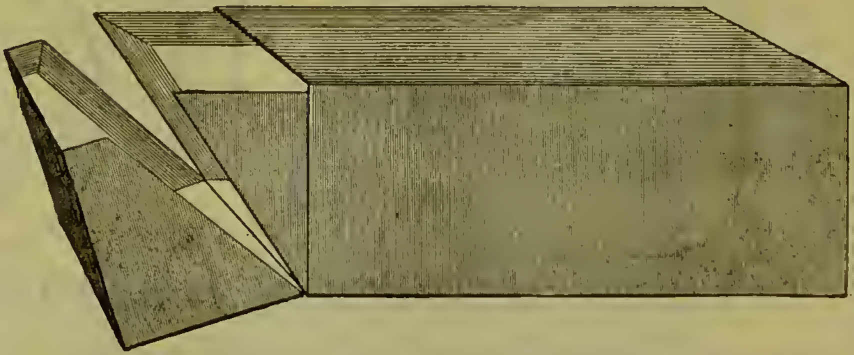
½	¾	1	1½	2	3	4	6	8 ounces.
1/7	1/9	2/	2/2	2/5	3/	4/	5/	6/ per doz.

TOOGOOD'S NEW REGISTERED SLIDE BOXES FOR POWDERS, &c.

REGISTERED No. 154,622.

PRICES.

	For 6	12	18	24 Powders
White Enamel	6/9	7/9	8/9	9/9 gross
Purple ...	7/9	8/9	9/9	10/9 ,,



TOOGOOD'S AIR-TIGHT AND GREASE-PROOF PAPER

FOR PACKING LINSEED MEAL, JUJUBES, &c. Demy size, 6/6 ream.

TOOGOOD'S PATENT BRONCHITIS AIR KETTLE,

51/- per dozen.

SOLE AGENT FOR DR. LEE'S STEAM DRAFT INHALERS.

THE "STIPENDUM" STOPPER CO., LIM.

47 LAMB'S CONDUIT STREET, LONDON, W.C.,

Manufacture the following Specialities—

"STIPENDUM" CORK STOPPERS, in all sizes.
"STIPENDUM" CORK-LINED CAPS, for Pomade Bottles.
"STIPENDUM" SCREW CAPS, for Pomade Bottles.
"STIPENDUM" OPENERS, for Stoppered Aërated Water Bottles.

"STIPENDUM" GREASE-PROOF COVERED POTS

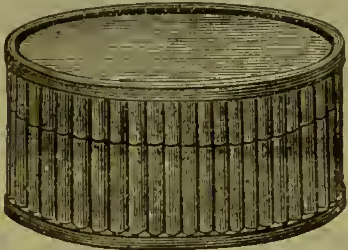
IN TERRA COTTA, CHOCOLATE, AND BLACK.

The Grease-Proof Covered Pots have perfectly fitting lids, are practically unbreakable, and the only article really answering the purpose intended.

The following Analytical Report should be noted by the trade:—

London, *January* 5, 1891.

"We have examined the two covered pots marked November 21, 1890, one containing strong nitrate of mercury ointment, and the other iodine ointment, the object being to discover—(1) Whether the ingredients of which the pots are composed have in any way affected the ointments; (2) Whether the pots have been deteriorated by the action of the ointments.



We hereby certify that no trace of any of the ingredients of the pot can be discovered in either of the ointments, and further that the pots themselves were found not to have been acted on at all; and we further consider 'Stipendum' admirably adapted for such pharmaceutical preparations.

Signed, C. T. KINGZETT, F.I.C., F.C.S.
(Ex Vice-President Society of Public Analysts).
R. H. HARLAND, F.I.C. F.C.S.
(Public Analyst).

To be had of all Druggists' Sundriesmen *Wholesale only of the Company.*

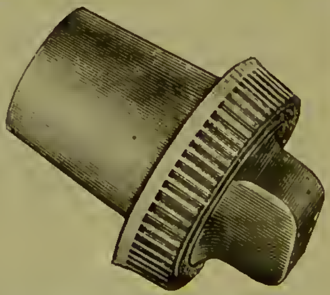
THE

"STIPENDUM" P.B. (Regd.) STOPPER

From 3 oz. to 16 oz.

ESPECIALLY RECOMMENDED FOR

DISPENSING PURPOSES



AS WELL AS FOR

STOPPING BOTTLES CONTAINING ACIDS, OILS,

Or any Liquid liable to SOIL or BURN the Fingers.

This Stopper preserves its balance when taken from the bottle, and is Invaluable for Liquids of a Burning or Soiling nature to table or other linen.

TO BE HAD IN ALL SIZES, SEPARATELY OR IN ASSORTED BOXES, OF

MESSRS. S. MAW, SON & THOMPSON, AND ALL DRUGGISTS' SUNDRIESMEN;

WHOLESALE ONLY OF THE

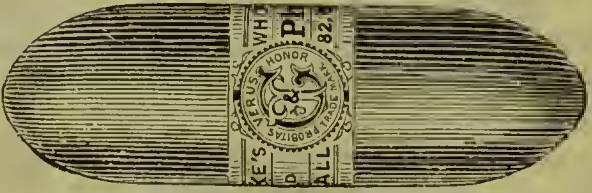
"STIPENDUM" STOPPER CO., LIM.

WILEY'S CHEMICAL ESSENCE
FOR
LAMENESS IN HORSES.

Agents Wanted in every Town. Handbills, with Name and Address, supplied gratis.
50 YEARS' UNBROKEN SUCCESS.

SOLE MAKER & PROPRIETOR, J. ROOKLEDGE, CHEMIST, EASINGWOLD, YORK.
TO BE HAD OF USUAL WHOLESALE HOUSES.

WALKER, TROKE & CO.
WHOLESALE DRUGGISTS,
82 CITY ROAD,
LONDON, E.C.



SOLE MAKERS OF
GABRIEL & TROKES'
GELATINE CAPSULED
HORSEBALLS
Alterative, Condition, Cordial
Cough, Diuretic, Fever,
Physic, and Worm Balls.
QUOTATIONS & SAMPLES FREE ON APPLICATION.

MILLAR'S BRITISH WINES.
ORANGE (suitable for Quinine), GINGER, RAISIN, COWSLIP, CHERRY, &c.
A. MILLAR & CO., Thomas Street, DUBLIN.
Sole Agents for London and District—H. J. ROYDANT & CO., 75 Acre Lane, Brixton, S.W.

A WORD TO THE WISE.

Chemists who wish to increase their returns, read and ponder over the following:—There are in England millions of birds kept in cages; what do you do to cater for them? In every town there are a large number of bird-fanciers, who use a quantity of bird foods, and every chemist can supply them with advantage and profit to himself.

The proprietor of Capern's Specialities for cage birds was a chemist for 20 years, and can therefore speak with experience as to the feasibility of working bird foods in conjunction with a chemist's business. In every town there are bird clubs, and foods of various kinds are used, and chemists should lay themselves out to supply these wants. Why, in the city of Glasgow alone we sell £1,200 of our packed goods and in many a village in Wales hundreds a year. Some time since a pharmaceutical chemist wrote to us for one of our preparations for a customer of his; as we had no agent in his town we offered it to him. He answered—No! he thought there were no birds kept there, and he didn't think he would stock them. We offered him them on sale or return, and now his orders amount to a good many pounds' worth each time, and increase with each order.

In Norwich one firm alone sells about 40,000 canaries a year, and they are valuable stock. A crested Norwich sold for £80, and a Scotch fancy canary sold for £40, besides bringing in about £30 in one year in prizes.

All our goods have been thoroughly experimented on before bringing out. We import all our seeds direct from abroad to guarantee their sweetness and quality. We import hundreds of tons of seeds yearly. Our sales of only one of our seed mixtures during 1889 was 290 tons, and our mixture for blackbirds and thrushes 40 tons. We give every facility and advice to chemists to promote the sale of our goods. They are well got up and fit for any counter. Any goods found unsaleable will be allowed for if returned carriage paid. We send handsome showcards and handbills. About a £2 order we send carriage paid. Write for wholesale list to-day.

F. CAPERN, Bird Specialist, BRISTOL.

STEINER'S VERMIN PASTE
FOR DESTROYING
RATS, COCKROACHES, ETC.
IN [TRY IT]
3d., 6d., & 1/ Glass Jars; 2/6 & 5/ Tins.
Warranted to Keep for Export.

REGISTERED.

STEINER'S VERMIN KILLER
FOR [NEVER FAILS.]
DESTROYING
MICE, ETC.
1*d*., 3*d*., 6*d*., and 1*s*. Packets.

STEINER'S INSECT POWDER
PRIME DALMATIAN.
ENGLISH GROUND.
The most energetic Insecticide. Kills Bugs, Fleas, and all offensive Insects. Quite harmless to Domestic Animals.
1d., 3d., 6d., & 1s. Tins (& Bellows).
Also in 7-lb. and 56-lb. Tins, and in Kegs of 1 cwt. and upwards.

E. Steiner & Co. are Sole Proprietors & Manufacturers of
JAMES'S PHOSPHOR PASTE
FOR DESTROYING
BEETLES, RATS, MICE, ETC.
Sold in 1*d*., 3*d*., 6*d*., and 1*s*. Glass Jars.
May be obtained through all the Wholesale Houses, or direct from
THE WORKS, LIMEHOUSE, LONDON, ENGLAND.

LIKE UNTO THE FLIES THEY ARE INTENDED TO CATCH,

WILSON'S

PATENT

STICKY FLY PAPERS

ARE NOW

ALL OVER THE LAND!

And no wonder, when it is known how completely satisfactory they are to both dealers and consumers. 'Tis simply their own solid worth which has carried them

HERE, THERE, & EVERYWHERE.

May be obtained from all Wholesale Houses or Direct from the Maker,

SAML. WILSON, Chemist, ST. HELENS.

4s. PER GROSS, CARRIAGE PAID.

WHOLESALE DEALERS AND SHIPPERS, PLEASE APPLY FOR SPECIAL TERMS.

S.V.R., B.P.

We wish to draw the attention of Chemists to the excellence of the spirit we supply for pharmaceutical purposes. We have devoted great care and attention to this branch and have made it a leading line.

That our efforts in this direction have been appreciated is proved by the number of *unsolicited* testimonials we have received from nearly every town in the country, of which the following is a specimen:—

GENTLEMEN,— The Pharmacy, Morecambe.

Please send 5 gall. 56 o.p. as before. I have pleasure in saying I have always found your spirit answer all tests, which is more than I can say of all I have had from different places, and also to be practically free from odour.

Messrs. Stephen Smith & Co. Yours faithfully, JOSH. N. CUTTS, B.Sc., F.C.S.

SPECIALITY FOR PERFUMERY.

This pure grain spirit, which has been thrice rectified and filtered through charcoal, is being largely used in making high-class Perfumes.

STEPHEN SMITH & CO., BOW, LONDON, E.

S. V. METH.

JONES & COMPANY,
COPPERFIELD ROAD
LONDON, E.
LARGEST MAKERS IN THE KINGDOM.

We are prepared to supply **METHYLATED SPIRIT** in 5-gallon quantities at Lowest Prices.

REDUCTIONS TO LARGE BUYERS.

SAMPLES FREE.

JAMES BURROUGH, S.V.R.

65 o.p. 60 o.p.

CALE ST., CHELSEA, S.W.

and Methylated Spirit

AT LOWEST PRICES.

WRITE FOR QUOTATIONS.

BOORD & SON,

DISTILLERS, FOREIGN WINE AND SPIRIT MERCHANTS, AND METHYLATORS,
ALLHALLOWS' LANE, & BARTHOLOMEW CLOSE, LONDON, E.C.

Quotations for **S.V.R.** Methylated Spirit and Finish on application.

FINEST ORANGE WINE FOR QUININE.

RAYNER'S PATENT CASH CHECK TILL.

THE ONLY ACCURATE TILL IN THE MARKET.

Keeps each Assistant's takings separate. Shows who takes the Bad Coins.
Shows who makes the Mistakes in giving Change.
And by the certainty of Detection will keep many a youth honest who might be tempted to pilfer.
Shows at a glance who is the best Salesman. Simple in action, and cannot be Tampered with by Strangers.

Price List Free. **J. W. RAYNER, Thorne Works, DONCASTER.** *Price List Free.*

WEDGWOOD ACID-PROOF

MORTARS AND PESTLES.

ALSO MANUFACTURERS OF

Funnels, Evaporating Pans, Electric Battery Fittings, Bed Pans, Urinals, Medicine Spoons, Physic Cups, Sick Feeders, Bleeding Basins, Medicine Measures, Eye Cups, Inhalers, Nursery Lamps, Wall Tiles, &c.

PRICE LIST ON APPLICATION. SPECIAL QUOTATIONS FOR LARGE ORDERS.

Any Article not bearing the Stamped Trade Mark "WEDGWOOD" is not made by us.

JOSIAH WEDGWOOD & SONS, ETRURIA, STOKE-ON-TRENT.
London Rooms ST. ANDREW'S BUILDINGS, HOLBORN CIRCUS.

CARBOLIC DISINFECTANTS

London, 1884. London, 1884.

BEFORE ORDERING ELSEWHERE write for detailed Price Lists and Samples of

POWDERS, ACIDS, FLUIDS, SOAPS, &c

TO

ADAMS, WEBSTER & CO.

Wholesale and Export Disinfectant Manufacturers, Hackney, LONDON, N.E.

CONTRACTORS TO HER MAJESTY'S GOVERNMENT.

TO THE WEED KILLER TRADE.

For destroying Weeds, Moss, &c., on Garden Walks, Carriage Drives, Roads, &c.

We desire to point out the special advantages which the sale of our "Acme" Weed Killer affords the Trade

1. The "Acme" Weed Killer is used in the gardens and on the estates of the Gentry in nearly every town in the Kingdom.
2. Our Retail Prices are such as will induce a ready sale, and we make no charge for 1 and 2 gallon tins.
3. We pay carriage on six 1-gallon tins, or on four 2 gallon tins, and on 10 gallons in drums and upwards.
4. Drums are charged at cost price. Full price allowed when returned.
5. By taking a 40 gallon cask, and retailing it in small quantities, the Retailer makes upwards of 140 per cent. profit.

Trade Terms on application.

RETAIL PRICES.—In 1 and 2 gallon tins, 2/- per gallon (tins included); in 5-gallon drums, 1/6 per gallon; 10, 15, and 20 gallons, 1/4 per gallon; in 40-gallon casks, 1/2½ per gallon.

TESTIMONIALS received from Mr. HEAD, Crystal Palace; Mr. IRWIN LYNCH, Cambridge Botanic Gardens; and others.

THE "ACME" WEED KILLER, FOR CHEAPNESS & EFFICIENCY, HAS WON FOR ITSELF A NAME THROUGHOUT THE KINGDOM FAR ABOVE ALL OTHERS.

SOLE PROPRIETORS AND MANUFACTURERS—

THE ACME CHEMICAL CO., Tunbridge, Kent; and Carlton Street, Bolton, Lancashire.

PETROLEUM JELLY,

PARAFFINUM MOLLE B.P.

(PIONEER BRAND) Registered Trade Mark.

Equal to and Cheaper than **VASELINE.**

FOR MEDICAL AND PHARMACEUTICAL PURPOSES.

White, Yellow, Veterinary, and Waterproof. All kinds put up in 1-lb., 5-lb., 7-lb., 14-lb., 28-lb., and 56-lb. Patent Tins, and in 300-lb. Barrels.

Pure Castor Oil, Cod Liver Oil, White Mineral Oil, Best Eating Olive Oil, Pale and Crude Carbolic Acid, Carbolic Powders, Sheep Dip, Benzine 50 per cent. and 90 per cent., Crude and Rectified Spirits of Tar, Stockholm Tar, Camphor Ice, Carbon Candles.

PATENT

CARBOLIZED PEAT,

THE NEW AND POPULAR DISINFECTING POWDER.

SEND FOR SAMPLES AND PRICES TO

GRINDLEY & CO., Lim., POPLAR, LONDON, E.

(ESTABLISHED 1868.)

HORN & SON

OFFICES FOR BRITISH AND FOREIGN
PATENTS AND TRADE MARKS,
SOMERSET CHAMBERS, 151 STRAND, LONDON
(NEXT TO SOMERSET HOUSE).
Guide to New Patent Law and Registration gratis.

NATALI & CO.

SHOP FITTERS & SHOW-CASE MAKERS,
184 Aldersgate Street, LONDON.

SECOND-HAND SHOP FITTINGS BOUGHT, SOLD, AND EXCHANGED.
ESTABLISHED 1863.

ALBERT J. TAYLOR & CO.

GUMS
30 GREAT TOWER STREET, LONDON, E.C.

ARABICS specially offered; Varnish Gums and Sandrac, Benzoin, Tragacanth, Myrrh, Shellac, Genuine Beeswax, Glycerine, Cutch, Senna, Aloes, Vanilloes, Rhubarb, Honey, Tamarinds, Chillies, Dragon's Blood.
Enquiries Esteemed.
Telegraphs:—"Albert Taylor London."

HUDSON'S HALF-MINUTE THERMOMETER,

Inland Post Free, **3/6.**
CLINICAL THERMOMETERS IN CASES,
25/- per dozen. Trade Discount.
For Medical Opinions see page 39 *in Special Issue.*

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OPTICIANS, PATENTEES, AND MANUFACTURERS,
5 Crosby Square, LONDON, E.C.

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New Illustrated Catalogue and Trade Discounts on good saleable Specialties.

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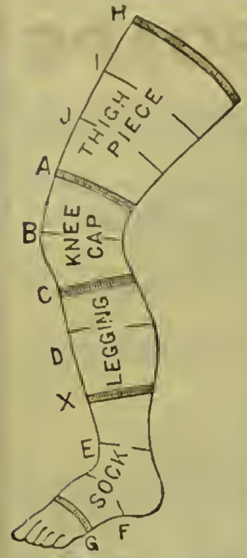

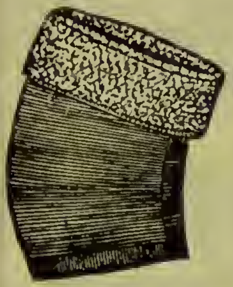

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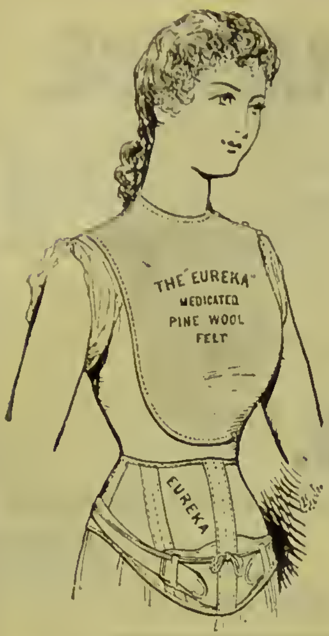

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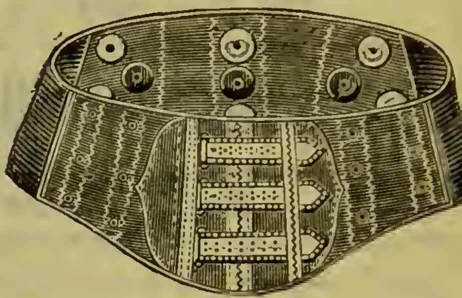

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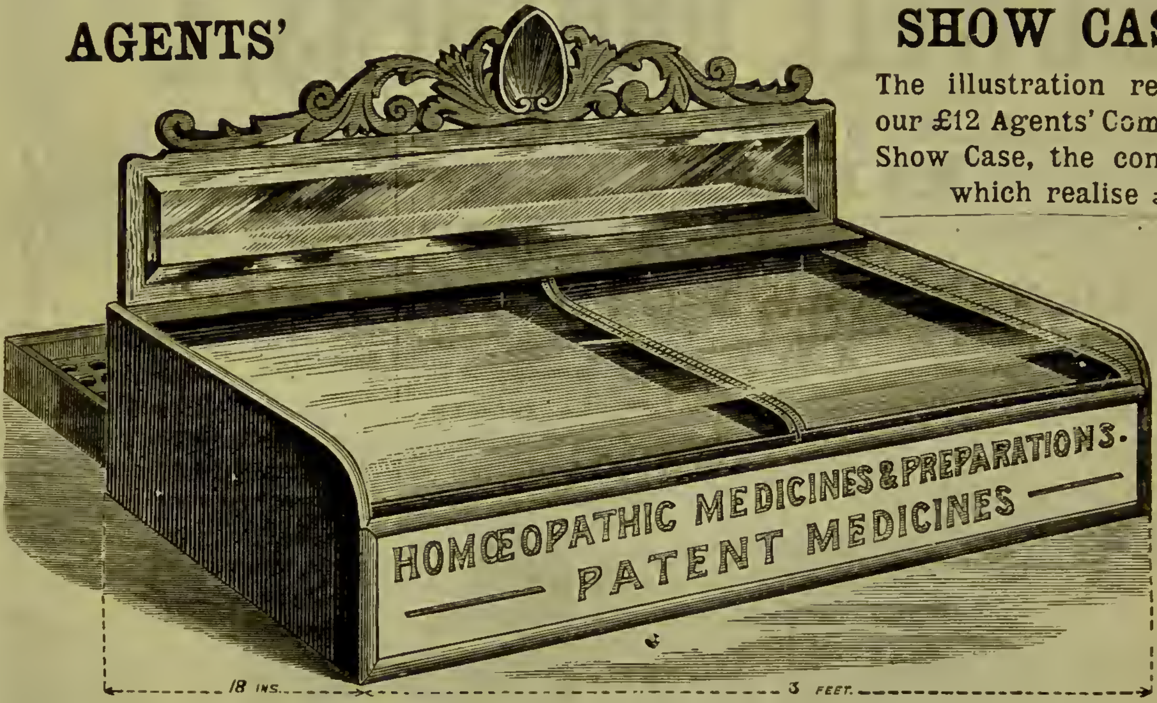
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